University Chronicle

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STATEMENT FOR 1898-99.*

By MARTIN KELLOGG.

Our statistics for the past year are interesting and satisfactory. The roll of students at Berkeley numbers about 1,715, an increase of 50 since the year preceding, and more than in any previous year. It is an increase of 460 per cent. over the number ten years ago. Counting in the other departments of the University, the whole number enrolled the past year is 2,200, or more. The degrees given to-day number 360.

The University has received important gifts during the year. Chief among these is that which was announced in a communication from Miss Cora Jane Flood, dated September 13, 1898, and presented through Regent Arthur Rodgers. The communication was as follows:

SAN FRANCISCO, September 13, 1898.

To the Regents of the University of California,

GENTLEMEN:—I hereby tender to you the following property: The Flood residence and a tract of about five hundred and forty acres near Menlo Park, California. One-half interest in about twenty-four hundred acres of marsh land adjacent to the residence tract, and four-fifths of the capital stock of the Bear Creek Water Company, which supplies water to Menlo Park and vicinity.

The only conditions I desire to accompany this gift are, that the residence and reasonable area about it, including the present ornamental grounds, shall be kept in good order for the period of fifty

* President's Commencement Statement, 1899.

years, and the net income from the property and its proceeds shall be devoted to some branch of commercial education.

Yours very truly,

CORA JANE FLOOD.

The offer of Miss Flood was gratefully accepted. The mansion thus given to the University is one of the finest ever built on this coast, and will outlast this generation as the monument of a successful and typical pioneer, whose memory is sacred to his children. The land included in this gift is susceptible of very valuable uses for the benefit of the State.

An important gift of a scholarship has just been received from Mrs. C. B. Houghton, of Benicia. Its amount is to be $150 a year, with a preference for residents of Benicia and the vicinity, or those who have special ties with that locality. This scholarship is founded in memory of her late husband, Cornelius B. Houghton, and is to be called by his name. He was born April 14, 1823, in Cambridge, Mass., and came to California in 1849. He resided in Benicia from 1853 till his death, honored for his public spirit and civic service, for the integrity and purity of his life.

Other gifts may be mentioned as follows:

From the E. P. Allis Company, of Milwaukee, to the Mining Department, an ore-sample grinder. From H. P. Chandler, to the Botany Department, 750 specimens of flowering plants. From Mrs. Elise C. Hall, of Santa Barbara, to the Medical Department, a valuable and extensive medical library, owned by her deceased husband, Dr. Richard J. Hall. From D. Henshaw Ward, 74 rare English volumes of the last century. From Mrs. Phebe A. Hearst, a collection of choice architectural books, of the value of $250. From James K. Moffitt, a third annual gift of $100 to the library. From Mrs. Hannah Weill, a number of Hebrew books for the Semitic collection. From the Duc de Loubat, a valuable facsimile of the Maya codex. From F. W. Dohrmann, two valuable reports issued by

the Italian School of Commerce at Venice. From Lieutenant C. G. Calkins, of the Hydrographic Survey, 71 volumes. Within the year the University has received the library bequeathed to it by Professor George M. Richardson, in 1896; it contains 1015 volumes.

Gifts of service have been continued by Rabbi Jacob Voorsanger, Judge C. H. Lindley, Professor H. Schussler, and Dr. G. Gutsch. In the absence of Lieutenant Cloman, who was summoned to the field, Professor Frank Soulé has taken charge of the Military Department, in addition to his duties in the College of Civil Engineering. Professor George Davidson has begun his work in the newly-established College of Commerce. Other courses in that College have been given in the Departments of History and Political Science. Professor C. C. Plehn has done efficient work as its dean.

University Extension Courses have been given in San Francisco, with numerous lectures in various parts of the State by Professors and Instructors in the University. The Farmers' Institutes have been vigorously pushed throughout the year, and have excited great interest. Numerous commendatory resolutions from the attendants on these meetings are on file in the Secretary's Office. Nearly one hundred meetings were scheduled.

Additional courses in Summer Schools have been provided, and a further expansion of summer work is being organized for another year.

Since the last Commencement we have welcomed three distinguished educators from the East; two of them coming under the auspices of the Philosophical Union. Professor William James, of Harvard, was here in August, and delivered memorable addresses both in Berkeley and Oakland. President William R. Harper was our guest on Charter Day, and aroused much enthusiasm by the work of his crowded week. Professor John Dewey, of Chicago, has just completed a brief and masterly series of lectures in Philosophy.

The relations between the University and the secondary schools have continued in full force. High schools to the number of ninety-eight are on the list of those which ask for accrediting.

The interest in Athletics has been more general and more fruitful than in any former year. There has been faithful training in football, baseball, and track athletics, with duly gratifying results. In the still more important tests of intellectual life, the Carnot medal and the intercollegiate debates have shown undiminished intellectual vitality. To the list of gifts for the year may now be added the sum of $200 offered by Mr. James Moffitt to the winning side in the debate between the Universities. Like the gift of Senator Perkins last year, this new prize fell to the lot of our representatives.

In San Francisco the Medical and Pharmaceutical Departments have already occupied their new quarters in the Affiliated Colleges Buildings. The Law, Dental, and Veterinary Departments look forward to an early transfer. The Mark Hopkins Institute of Art is undergoing extensive improvements, the additional gift of Mr. Edward F. Searles.

The Wilmerding School, under the care of the Regents, has found a Director, and a very desirable site for its buildings. The lot originally selected has been exchanged for a more convenient one very near the Lick School. The two schools will thus be enabled to work in friendly coöperation.

Mr. Everett Schwartz, of Waltham, Massachusetts, whose work in that city was most highly esteemed, was last autumn elected Director of the School, and came to San Francisco before the close of the year. He has since then been preparing the way for opening the School next September. Plans for the first building are completed.

It is worthy of note that certain denominational institutions, either colleges or seminaries, are entertaining the thought of closer proximity to the University. From the time of President Gilman the invitation to take advantage

of the University in all secular studies has been freely extended. At last there is a movement in this direction. The Christian Seminary came to Berkeley more than a year ago. The Congregational Seminary has now determined to come as soon as practicable. If other denominations take the advice of President Harper, they will follow these examples, and thus secure economy of administration and wider views of life for their graduates.

The Regents' Committee on Finance has presented a report which deeply concerns the welfare of the University, and deserves the earnest consideration of all the University's friends. The financial situation is briefly this: An income increased about 33 per cent. over the income of ten years ago. The number of students at Berkeley increased 460 per cent. With a budget for 1899–1900 prepared with a view to the closest economy, the estimated deficit is over $47,000. The reason of the deficit is solely the unprecedented increase in the roll of students. It costs no more now than ten years ago to educate a student; in fact, it costs much less. But no comparative gain per capita can compete with the percentages given above; 33 can never be made equal to 460. It is a mathematical impossibility that the University should go on expanding as it has done, with an income that has small prospect of expanding, and is so hopelessly inadequate.

The Finance Committee has proposed several methods of meeting the deficit. The only one that could give permanent relief, and which was recommended by the committee, has been rejected by the Board. The other methods proposed are such as would cripple the work of the University, by cutting down departments, or by a general reduction of salaries and budget allotments. Some one of these plans may be adopted, or a new and perhaps a mixed scheme may be devised by the larger committee appointed at the last meeting of the Board.

I am not about to discuss any of the plans submitted, nor to suggest any different scheme of retrenchment. But

I deem it important to say to the California public, that most of the plans proposed already cannot give permanent relief. Whatever enforced reductions are made for the coming year, the same difficulties will return the next year, and in subsequent years. The enormous disparity between expenses and income cannot be cured by any heroic surgery.

I make these statements in order to bring out the imperative necessity of help for the University from other sources than those which are now relied on. We must have endowments for chairs of instruction. The University has been generously founded and maintained, both by the nation and by the State. With ordinary growth it might go forward with its present resources. But our prosperity has overborne us; we cannot educate, with lavish freedom from tuition, all the youth that throng to our doors. Our cry is now for endowments! endowments! to lift one, and another, and many of the departments from their abject dependence on the general fund. A great University costs large sums for its proper maintenance. The State cannot be expected to do it all. Private munificence must come in to supplement public appropriations. Private munificence, in furnishing endowments for instruction, is now the supreme need of the University of California.

In soliciting such help from those who have money to spare, I suggest again, as I have done before, that the Alumni, now a numerous and rapidly growing body, should take the chief burden of solicitation. When Lord Erskine was asked how he dared to take the bold step which was the beginning of his brilliant career, he replied, "I thought of my children as plucking at my robe, and saying, 'Now, father, is the time to get us bread.'" I hope the Alumni of this University will see the youthful form of their Alma Mater standing before them, with perplexity and anxiety visible on her fair face, and saying, "Now, children, is the time to get me endowments."

PSYCHOLOGY AND PHILOSOPHIC METHOD.*

By JOHN DEWEY.

Every science in its final standpoint and working aims is controlled by conditions lying outside itself—conditions which subsist in the practical life of the time. With no science is this as obviously true as with psychology. Taken without nicety of analysis, no one would deny that psychology is specially occupied with the individual; that it wishes to find out those things that proceed peculiarly from the individual, and the mode of their connection with him. Now, the way in which the individual is conceived, the value that is attributed to him, the things in his make-up that interest, are not due at the outset to psychology. The scientific view regards these matters in a reflected, a borrowed, medium. It is in the light of social life that they are revealed. An autocratic, an aristocratic, a democratic society propound such different estimates of the worth and place of individuality, they procure for the individual as an individual such different sorts of experience, they aim at arousing such different impulses and at organizing them according to such different purposes, that the psychology arising in each must show very different tempers.

In this sense, psychology is a political science. While the professed psychologist, in his conscious procedure, may

*Address before the Philosophical Union, May, 1899, by Professor John Dewey, Ph.D., Head Professor of Philosophy in the University of Chicago.

easily cut his subject-matter loose from these practical ties and references, yet the starting point and goal of his course are none the less socially set. It is in this conviction that I venture to introduce to an audience that could hardly be expected to be interested in the technique of psychology, a technical subject, hoping that the human meaning may yet appear.

Put briefly and as clearly as may be in advance of detailed argument, the point is this: There is at present a strong, apparently, a growing tendency to conceive of psychology as an account of the consciousness of the individual, considered as something in and by itself; consciousness, the assumption virtually runs, being of such an order that it may be analyzed, described, and explained in terms of just itself. The statement, as commonly made, is that psychology is an account of consciousness, *qua* consciousness, just as consciousness; and the phrase is supposed to limit psychology to a certain definite sphere of reality which may receive adequate discussion for scientific purposes at least, without troubling itself with what lies outside. Now if this be true, I hardly need point out that the question concealed in my title, is already answered in the negative. There is no intimate, no important connection of psychology and philosophy at large. That philosophy whose range is comprehensive, whose problems are catholic, should be held down by a discipline whose voice is as partial as its material is limited, is obviously out of the range of intelligent discussion.

But there is another possibility. If the individual of whom psychology treats be, after all, a social individual, any absolute setting off and apart of a sphere of consciousness as, even for scientific purposes, self-sufficient unto itself, is condemned in advance. All such limitation, and all the inquiries, descriptions, explanations that go with it, are preliminary and instrumental only. We have here but a symbol having its translation in social activity; an anatomy whose life is in its social operation. To know the

symbol, the psychical letter exactly, is important; but its necessity lies not within itself, but in the need of an understood language for reading the things signified, the social spirit. In this case, we cannot be so sure that psychology is without large philosophic significance. Whatever meaning the individual has for the social life that he both incorporates and animates, that meaning has psychology for philosophy.

It is clear that this problem is too important and too large to suffer attack *in toto* in an evening's address. Yet I have ventured to consider a portion of it, hoping that such things as may appear will be useful clues in entering wider territory. We may ask what is the effect upon psychology of considering its material as something so distinct as to be capable of treatment without involving larger issues of reality. In this inquiry we take as representative some such account of the science as this: Psychology deals with consciousness 'as such' in its various modes and processes. It aims at such isolation of each as will permit accurate description: at such statement of its place in the serial order as will enable us to state the laws by which one calls another into being, or will give us the natural history of its origin, maturing, and dissolution. It is both analytic and synthetic—analytic in that it resolves each into its constituent elements; synthetic in that it discovers the processes by which these elements combine into complex wholes and series. It leaves alone—it shuts out—questions concerning the validity, the ultimate import of these modifications: of their value in conveying truth, in effecting goodness, in constituting beauty. For it is just with such questions of worth, of validity, that philosophy has to do.

Some such view as this is held by the great majority of working psychologists to-day. A variety of reasons have conspired to bring about this general acceptance. Such a view seems to enroll one in the ranks of the scientific men rather than with the metaphysicians—and there are those

who distrust the metaphysicians. With others it is desire to take problems piecemeal and in detail, avoiding that excursion into ultimates, into that never-ending panorama of new questions and new possibilities that seems to be the fate of the philosopher proper. While no temperate mind can do other than sympathize with this view, it is hardly more than an expedient. For, as Mr. James remarks, after disposing of the question of free-will by relegating it to the domain of the metaphysician:—"Metaphysics means only an unusually obstinate attempt to think clearly and consistently"—and clearness and consistency are not things to be put off beyond a certain point. When the metaphysician chimes in with this new-found modesty of the psychologist, so different from the disposition of Locke and Hume and the Mills, salving his metaphysical conscience with the remark—it hardly possesses the dignity of a conviction—that the partial sciences, just because they are partial, are not expected to be coherent with themselves nor with one another; when the metaphysician, I say, praises the psychologist for sticking to his last, we are reminded that another motive is also at work. There is a half-conscious irony in this abnegation of psychology. It is not the first time that science has assumed the work of Cinderella; and, since Mr. Huxley has so happily reminded her, she is not altogether oblivious, in her modesty, of a possible future check to the pride of her haughty sister, and of a certain coronation that shall mark her coming to her own.

But, be the reasons as they may, there is little doubt of the fact. Almost all our working psychologists admit, nay, herald this limitation of their work. I am not presumptuous enough to set myself to do battle against this array. I too proclaim myself of those who believe that psychology has to do (in the first place, that is) with 'consciousness as such.' But I do not believe that the professed limitation follows. Quite the contrary: if 'consciousness' or 'state of consciousness' be given intelligible meaning, I believe that this conception is the open gateway into the fair fields of

philosophy. For, note you, the phrase is an ambiguous one. It may mean one thing to the metaphysician who proclaims: Here finally we have psychology recognizing her due metes and bounds, giving bonds to trespass no more. It may mean quite another thing to the psychologist in his work—whatever he may happen to say about it. To come to the point, it may be that the psychologist deals with states of consciousness as the objective, the analyzable and describable form, to which he reduces the Reality he is studying. Not that they *are* that Reality, but that they are its indications, its clues, in shape for handling, for treatment by scientific methods. So, for example, does the paleontologist work. Those curiously shaped and marked forms to which he is devoted are not life, they are not the literal termini of his endeavor; but through them as signs and records he construes that life. And again, the painter-artist might well say that he is concerned only with colored paints as such—or, to go a step beyond, with shaded colors as such. Yet none the less through them as registers and indices, he reveals to us the mysteries of sunny meadow, shady forest, and twilighted wave. These are the things-in-themselves of which the oils on his palette are the phenomena.

So, to return to our problem, the preconception of the psychologist with states of consciousness may signify that they are the media, the concrete conditions to which he purposely reduces his Reality in order *through them*, as methodological helps, to get at and understand that which is anything but a state of consciousness. But he who insists upon the fixed and final limitation of psychology must interpret this preoccupation in quite another sense. To him the state of consciousness is not the shape some fact takes from the exigency of investigation; it is literally the full fact itself. It is not an intervening term; it bounds the horizon. Here then the issue defines itself. I conceive that states of consciousness (and I hope you will take the phrase broadly enough to cover all the specific data of psychology) have no existence 'as such'—to employ the

favorite term once more—before the psychologist begins to work. He brings them into existence. In asking a certain question, he operates to secure the media of answering it, and this medium is 'consciousness' as the psychologist treats it. What we are really after is the process of experience, the way in which it arises and behaves. We want to know its course, its history, its laws. We want to know its various typical forms; how each originates; how it is related to others; the part it plays in maintaining the inclusive, expanding, connected whole of experience. Our problem as psychologists is to learn its *modus operandi*, its method.

An illustration may save argument and condense reasons. The paleontologist is again summoned to our aid. In a given district he finds a great number and variety of footprints. From these he goes to work to construct the structure and the life habits of the animals that made them. The tracks exist undoubtedly; they are there; but yet it is not as existences he deals with them but as signs, phenomena in the literal sense. Imagine the hearing that the omnipresent critic would receive who should inform the paleontologist that he is transcending his field of scientific activity; that his concern is with footprints as such, aiming to describe each, to analyze it into its simplest forms, to compare the different kinds with one another so as to detect common elements, and finally, thereby, to discover the laws of their arrangement in space.

Yet the immediate data are footprints, and footprints only. The paleontologist does in a way do all these things that our imaginary critic is urging upon him. The difference is not that he arbitrarily lugs in other data; that he invents entities and faculties that are not there. It is just in the standpoint. The interest is in the animals, and the data are treated in whatever way seems likely to serve this interest. So with the psychologist. He is continually and perforce occupied with minute and empirical investigation of special facts—states of consciousness, if you please. But these neither define nor exhaust his scientific problem

and interest. They are his footprints, his clues through which he places before himself the life-process he is studying—with the further difference that his footprints are not after all given to him, but are developed by his investigation.*

The supposition that these states are somehow existent by themselves and in this existence provide the psychologist with ready-made material is just the supreme case of the "psychological fallacy:" the confusion of experience as it is to the one experiencing with what the psychologist makes out of it with his reflective analysis.

The simple fact is that the psychologist always begins with certain operations, acts, as his data. If these fall out of sight in the course of discussion, it is only because having been taken for granted, they remain controlling the whole development of the inquiry, and affording the sterling medium of redemption. It is such acts as perceiving, remembering, intending, loving, that give the points of departure; they alone are concrete experiences. It is to understand these experiences, under what conditions they arise and what effects they produce, that the analysis into states of consciousness occurs. And the modes of consciousness that are figured remain unarranged and unimportant, save as they are translated back into such experienced realities.

To remember is to do something, as much so as to shoe a horse, or to cherish a keepsake. To propose, to observe, to be kindly affectioned, are terms of value, of practice, of

*This is a fact not without its bearings upon the question of the nature and value of introspection. The objection that introspection "alters" the reality and hence is untrustworthy, most writers dispose of by saying that, after all, it need not alter the reality so very much—not beyond repair—and moreover, that memory assists in restoring the ruins. It would be simpler to admit the fact: that the purpose of introspection is precisely to effect the right sort of alteration. If introspection should give us the original experience again, we should just be living through the experience over again in direct fashion; as psychologists we should not be forwarded one bit. Continued reflection upon this obvious proposition may bring to light various other matters worthy of note.

operation; just as digestion, respiration, locomotion express functions, not observable objects. But the comparison suggests its own extension. There is an object which may be described: lungs, stomach, leg-muscles, or whatever. Through these structures we present to ourselves the function; it appears laid out before us, spread forth in detail—objectified in a word. The anatomist who devotes himself to this detail may, if he please (and he probably does please in concentrating his devotion) ignore the functions: to discover what is there, to analyze, to measure, to describe, gives outlet enough. But nevertheless it is the function which fixed the point of departure, which prescribed the problem and which set the limits, physical as well as intellectual, of subsequent investigation. It is reference to function which makes the details discovered other than a jumble of incoherent trivalities. One might as well devote himself to the minute description of a square yard of surface of desert soil were it not for this translation. Even a puzzle assumes some point, some possible interpretation, in the seeming mass of blind and brute circumstance. Even so states of consciousness are the morphology of certain functions.* What is true of analysis, of description, is true equally of classification. Knowing, willing, feeling, name states of consciousness not in terms of themselves, but in terms of results reached, the sorts of value that are brought into experience.†

*Thus to divorce "structure psychology" from "function psychology" is to leave us without possibility of scientific comprehension of function, while it deprives us of all standard of reference in selecting, observing, and arranging or explaining the structure.

†The following answer may fairly be anticipated: "This is true of the operations cited, but only because complex processes have been selected. Such a term as 'knowing' does of course express a function involving a system of intricate references. But, for that very reason, we go back to the sensation, which is the genuine type of the 'state of consciousness' as such, pure and unadulterate and unsophisticated." The point is large for a footnote, but the following considerations are instructive: (1) The same psychologist will go on to inform us that sensations, as we experience them, are networks of reference—they are perceptual, and more or less conceptual even. From which it would appear that whatever else they are or are not,

Explanation, even of an 'empirical sort' is as impossible as determination of a 'state' and its classification, when we rigidly confine ourselves to modifications of consciousness as self-existent somewhats. Sensations are defined, classified, and explained by reference to conditions which, according to the theory, are confessedly extraneous—sense-organs and stimuli. Indeed the whole physiological side assumes a ludicrously anomalous aspect.* While experimentation is retained, and even made much of, it is at the cost of logical coherence. To experiment with reference to a bare state of consciousness is a performance of which one cannot even imagine the nature, to say nothing of doing it; it is as meaningless as to experiment with reference to acts and the conditions of their occurrence, is natural and straightforward. Such simple processes as association are concretely inexplicable when we assume states of consciousness as existences by themselves (not as forms which the process of experience assumes when examined with reference to the genesis of its various modes.) As recent psychology testifies, here again we have to resort to conditions which have no place nor calling on the basis of the theory—the principle of habit, or else of some connection in the content or object, thus admitting in either case that it is neither the states which are associated (habits connect acts, not states; content belongs to the things associated, not to the states) nor are they the means by which the association is effected.†

the sensations, for which self-enclosed existence is claimed, are *not* states of consciousness. And (2) we are told that these are reached by scientific abstraction in order to account for complex forms. From which it would appear that they are hypothecated as products of interpretation and for purposes of further interpretation. Only the delusion that the more complex forms are just aggregates (instead of being just acts in experience, like seeing, hoping, etc.) prevents recognition of just the point in question—that the 'state of consciousness' is an instrument of inquiry or methodological appliance of reflection.

*On the other hand, if what we are trying to get at is just the course and procedure of experiencing, of course any consideration that helps distinguish and make comprehensible that process is thoroughly pertinent.

†It may avoid misunderstanding if I anticipate here a subsequent

We have only to note that there are two opposing schools in psychology to see in what an unscientific status the whole subject is. We have only to consider that these two schools are the result of assuming states of consciousness as existences *per se* to locate the source of the scientific scandals. No matter what the topic, whether memory or association or attention or effort, the same dualisms present themselves, the same necessity of choosing between two schools. One, lost in the distinctions which it has developed, denies the function because it can find objectively presented only states of consciousness. So it abrogates the function, regarding it as a mere aggregate of such states, or as a purely external and factitious relation between them—forgetting that the origin and *raison d'être* of the state of consciousness was but to define and get hold of the act or operation as experienced. The other school, recognizing that it is to explain away, rather than to explain, the values of experience, attempts to even up by declaring that these functions are themselves also immediately given data of consciousness, existing side by side with the 'states,' but indefinitely transcending them in worth, and apprehended by some higher organ. So against the elementary states and external associations of the sensationalist school in psychology, we have the complicated machinery of the intellectualist school, with its pure self-consciousness as a source of ultimate truths, its hierarchy of intuitions, its ready-made faculties. To be sure, these are now largely classified and reduced to some comprehensive form—Apperception, or Will, or Attention, or whatever the fashionable term may be. But the principle remains

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remark: that my point is not in the least that 'states of consciousness' require some 'synthetic unity' or faculty of substantial mind to effect their association. Quite the contrary; for this theory also admits the 'states of consciousness' as existences in themselves also. My contention is that the 'state of consciousness' as such is always a methodological product, developed in the course and for the purposes of psychological analysis. In this particular case 'states' and 'habits' are the correlative factors appear ing when we analyze a series of experiences of a certain type.

the same; the assumption of some function as a given existent, distinguishable in itself and acting upon other existences—as if digestion and vision as functions were regarded as separate from the activity of each constituent organic structure, somehow acting upon these from the outside so as to bring coöperation and harmony into them! This division into psychological schools is as reasonable as would be one of botanists into rootists and flowerists; of those proclaiming the root to be the rudimentary and essential structure, and those asserting that since the function of seed-bearing is the main thing, the flower is really the controlling 'synthetic' principle. The difficulty is that both sensationalist and intellectualist suppose that psychology has some special sphere of reality or of experience marked off for it within which the data are just lying around, self-existent and ready-made, to be picked up and assorted as pebbles await the visitor on the beach. Both alike fail to recognize that the psychologist has first experience to deal with; the same experience that the zoölogist, geologist, chemist, mathematician, and historian deal with, and that what characterizes his specialty is not some data or existences which he may call uniquely his own; but the problem raised—the problem of the course of experiencing as such as distinct from its special contents.

Here psychology gets its revenge upon those who would rule it out of possession of important philosophical bearing. As a matter of fact, the larger part of the questions that are being discussed in current epistemology and in what is termed metaphysic of logic and ethic arise out of (and are hopelessly compromised by) this original assumption of 'consciousness as such,' as material by itself—in other words, are provoked by the exact reason which is given for denying to psychology any essential meaning for epistemology and metaphysic. Such is the irony of the situation. The epistemologist's problem is, indeed, usually put as the question of how the subject can so far transcend itself as to get valid assurance of the objective world. The very

phraseology in which the problem is put reveals the thoroughness of the psychologist's revenge. It is just because the psychical as such has been reduced to 'states of consciousness' as independent existences, that the question of self-transcendence is raised. It is hardly too much to say that the entire epistemological industry is one—shall I say it—of a Sisyphean nature. *Mutatis mutandis*, the same holds of the metaphysic of logic, ethic, and aesthetic. In each case, the basic problem has come to be how a mere state of consciousness can be the vehicle of a system of truth, of an objectively valid good, of beauty which is other than agreeable feeling. We may, indeed, excuse the psychologist for not carrying on the special inquiries which are the business of the logical, ethical, and aesthetical philosophy; but can we excuse ourselves for forcing his results into such a shape as to make these special problems soluble only either by ignoring them entirely or else by arbitrarily wrenching them?

Undoubtedly we are between two fires. In placing upon psychology the responsibility of discovering the method of experience, do we not destroy just that limitation to concrete detail which now constitutes it a science, and not a piece of cloudy metaphysic? Will not the psychologist be the first to repudiate this attempt to mix him up in matters philosophical? But we need only keep in mind the specific realities in the term Course or Process of Experience and not lose ourselves in its mere generality. The immediate preoccupation of the psychologist is with very definite and empirical sorts of facts—questions like the limits of audition, of the origin of pitch, of the structure and conditions of the musical scale, etc. Just so the immediate affair of the geologist is with particular rock-structures, of the botanist with particular plants, and so on. But through the collection, description, location, classification of rocks the geologist is led on to the splendid story of world-forming. The limited, fixed, and separate piece of work is dissolved away into the fluent and dynamic

drama of the earth. So, the plant leads with absolute inevitableness into the whole process of life and its evolution.

In form, the botanist still studies the genus, the species, the plant—hardly, indeed, that; rather the special parts, the structural elements, of the plant. In reality, he studies the life itself; *they* are the indications, the signatures through which he renders transparent the mystery of life growing in the changing world. It was doubtless necessary for the botanist to go through the Linnean period—the period of engagement with rigid detail and fixed classifications; of tearing apart and piecing together; of throwing all emphasis upon peculiarities of number, size, and appearance of matured structure; of regarding change, growth, and function as external, more or less interesting, attachments to form. Examination of this period is instructive; there is much in contemporary investigation and discussion that is almost unpleasantly reminiscent in its suggestiveness. The psychologist should profit by the intervening history of science. It exhibits, to be sure, an accumulation of information, of knowledge of this and that; but the important matter is the change in attitude and method—in interest. The conception of evolution is not so much an additional law as it is a face-about. The fixed structure, the separate form, the isolate element, is henceforth at best a mere stepping-stone to knowledge of process, and when not at its best, marks the end of comprehension, and betokens failure to grasp from the inside.

With the change in standpoint from self-included existence to including process, from structural unit of composition to controlling unity of function, from changeless form to movement in growth, the whole scheme of values is transformed. Faculties are definite directions of development; elements are products that are starting-points for new processes; bare facts are indices of change; static conditions are modes of accomplished adjustment. It is not that the concrete, empirical phenomenon loses in

worth, much less that unveriable metaphysical entities are impertinently introduced. It is that our aim is the discovery of the process in its various adaptations to circumstance, and success is measured by our ability to place each special fact in the particular position it occupies. If we apply this evolutionary logic in psychology, where shall we stop? Questions of limits of stimuli in a given sense, say hearing, are in reality questions of temporary arrests, adjustments making the favorable equilibrim of the whole organism; they connect with the question of the import of sensation in general and auditory sensation in particular with reference to life-habits; of the origin and use of localized and distinguished feeling, or perception; and this, in turn, involves within itself the whole question of space and time consciousness; the significance of the thing-and-quality experience, and so on. And when we are told that the question of the origin of space experience has nothing at all to do with the question of the nature and significance of the space experienced, the statement is simply evidence that the one who makes it is still at the static standpoint; he believes that things, that relations, have existence and significance apart from the particular conditions under which they come into experience, and apart from the special service rendered in those particular conditions. But to return; the question of perception passes insensibly into that of attention, into that of interest and will, and so carries with it inevitably the whole problem of the part played by individuality in constituting the objective world of things and events.

Of course, I am far from saying that every psychologist must cover the whole journey. Each individual may contract, as he pleases, for any section or subsection he prefers; and undoubtedly the well-being of the science is advanced by such division of labor. But psychology goes over the whole ground, from the detection of every distinct fact of experiencing, to seeing what need calls it out as the special organ fitted to cope with the situation, and the

discovery of the machinery through which it operates in keeping agoing the whole course of experience.

But, I shall be told, the wall that divides psychology from philosophy cannot be so easily treated as non-existent. Psychology is a matter of natural history, even though it may be admitted that it is the course of experience itself whose history is to be written. But philosophy is a matter of values; of the criticism and justification of certain validities. One deals with genesis, with conditions of temporal origin and transition; the other with analysis, with eternal constitution. I shall have to repeat that it is just this rigid separation of genesis and analysis that seems to me to survive from a pre-evolutionary, a pre-historic age. It is not so much the assured barrier between philosophy and psychology as it is the sign of the distance dividing philosophy from all science. For the lesson that mathematics first learned, that physics and chemistry pondered over, in which the biological disciplines were finally tutored, is that sure and delicate analysis is possible only through the patient study of conditions of origin and development. The method of analysis in mathematics is the method of construction. The experimental method is the method of making, of following the history of production; the term 'cause' which has (when taken as an existent entity) so hung on the heels of science as to impede its progress, has universal meaning when read as condition of appearance in a process. And, as already intimated, the conception of evolution is no more the discovery of a general law of life than it is the generalization of all scientific method. Everywhere analysis that cannot proceed by examining the successive stages of its subject, from the beginning up to its culmination, that cannot control this examination by discovering the conditions under which the successive stages appear in their simplicity and purity, is only preliminary. It may further the invention of proper tools of inquiry, it may help define problems, it may serve to suggest most valuable hypotheses. But as

science it breathes an air already tainted. There is no way, in the results reached, to sort out those flowing from the subject matter itself, and those introduced by the assumptions and presumptions of our own reflection. Not so with natural history when it is worthy of its name. Here the analysis is the unfolding of the reality itself. Its distinctions are not pigeon-holes of our convenience; they are stakes that mark the parting of the ways in the process itself. Its classifications are not a grasp at factors resisting further analysis; they are the patient tracings of the paths pursued. Nothing is more out of date than to suppose that interest in genesis is interest in reducing higher forms to cruder ones. It is interest in locating the exact and objective conditions under which a given fact appears, and in relation to which it accordingly has its meaning. Nothing is more naive than to suppose that in pursuing 'natural history' (term of scorn in which yet resides the dignity of the world-drama) we simply learn something of the temporal conditions under which a given value appears, while its own eternal essential quality remains as opaque as before. Nature knows no such divorce of quality and circumstance. Things come when they are wanted and as they are wanted; and their quality is precisely the response they give to the conditions that call for them, and the furtherance they afford through being the one event that is meet and fit to the movement of the whole. This severance of analysis and genesis, instead of serving as a ready-made test by which to try out the empirical, temporal events of psychology from the rational abiding constitutions of philosophy is just a brand of the dualism of the philosophy that conceives it: the supposition that values are somehow externally obtruded and statically set in irrelevant rubbish.

Here we strike a deeper level. There are those who will admit that 'states of consciousness' are but the cross-sections of the arrested flow of experience, and made in order that we may reconstruct it in its life-history through

studying the organs, the structures, by which it executes its habits and realizes its aims. Yet in the knowledge of the course and method of our experience, they will hold that we are far from the domain proper of philosophy. This experience is just the historic achievement of finite individuals; it tell the tale of approach to the treasures of truth, of partial victory, but larger defeat, in laying hold of the treasure. But the reality is not the path to it, and record of devious wanderings in the path is hardly a safe account of the reality. Psychology, in other words, may tell us something of how we mortals lay hold of the world of things and truths; of how we appropriate and assimilate its contents; and of how we react. It may trace the issues of such approaches and apprehensions upon the course of our own individual destinies. But it cannot wisely ignore nor sanely deny the distinction between these individual strivings and achievements and the Reality that subsists and supports its own structure quite outside these finite futilities. The processes by which we turn over the Reality into terms of our fragmentary unconcluded, inconclusive experiences are so extrinsic to the Reality itself as to have no revealing power with reference to it. There is the *ordo ad universum*, the subject of philosophy; there is the *ordo ad individuum*, the subject of psychology.

It is some such assumption as this that lies latent, I am convinced, in all forswearings of the kinship of psychology and philosophy. Two conceptions hang together. The opinion that psychology is an account only and finally of states of consciousness, and therefore can throw no light upon the realities with which philosophy deals, is twin to the doctrine that the whole conscious life of the individual is something not organic to the universe itself. The philosophic basis and scope of this doctrine lie outside of examination here. But even in passing one cannot avoid remarking that the doctrine is almost never consistently held; the doctrine logically carried out leads so obviously to intellectual and moral scepticism that the theory

usually prefers to work in the dark background as a disposition and temper of thought rather than to make a frank statement of itself. So it usually gives back through some round-about method or special organ a part of what it takes away from the every-day, straightforward experience of man. But it is more pertinent upon this occasion to dwell upon the fact that even in the half-hearted expositions of the process of human experience as something merely annexed to the reality of the universe, we are brought face to face to the consideration with which we set out: the dependence of theories of the individual upon the position of which at a given time the individual practically and socially has possession. This doctrine of the accidental, futile, transitory significance of the individual's experience as compared with the eternal realities; this notion that at best the individual is simply realizing for and in himself what already has fixed completeness in itself is congruous only with a certain intellectual and political scheme and may modify itself as that shifts. When such rearrangement comes, our estimate of the nature and importance of psychology will mirror the change.

When man's command of the methods that penetrate to the truths of experience was precarious and disturbed; when the tools that subject the world of things and forces to use and operation were rare and clumsy, it was unavoidable that the individual should submit his consciousness and purposes blankly to the blank reality beyond. Under such circumstances, seemingly external authority must reign; the belief that human experience in itself is approximate, not self-contained, is inevitable. The worth of experience is measured by no self-set standard; its ideal is no reflection of its own process; its success is through no assured method of its own. Under such circumstances, reference to the individual, to the subject, is a resort only for explaining error, illusion, and uncertainty. Individuality, the self-functioning and the self-culmination of experience, is lacking. The necessity of the external control and

redemption of experience reports itself in the low valuation of the self, and of all the factors and phases of experience that spring from the self. That the psychology of mediaevalism should appear only as a portion of the theology of sin and salvation is as obvious as that it should be simply a part of cosmology with the Greeks—an account of how the fixed world of reality is shared.

As against all this, I hope it will not seem just braggadocio if the assertion is ventured that psychology as supplying us with the knowledge of the behavior of experience and thus with the general method of philosophy, is a conception of democracy. Its postulate is that since experience fulfills itself in individuals, since it administers itself through their instrumentality, the account of the course and method of this achievement is the most complete and centred statement of reality open to us.

Democracy is possible only because of a change in intellectual conditions. It implies tools for getting at truth in detail, and day by day, as we go along. Only such possession justifies the surrender of fixed, all-embracing principles to which, as universals, all particulars and individuals are subject for valuation and regulation. Without such possession, it is only the courage of the fool which would undertake the venture to which democracy has committed itself—the ordering of life in response to the needs of the moment in accordance with the ascertained truth of the moment. It is the deification of the here and the now; of the specific, the particular, the unique, that which happens once and has no measure of value save such as it brings with itself. Such deification is monstrous fetichism, unless the deity be there; unless the universal lives, moves, and has its being in experience as individualized.* In this conviction of the value of the individualized,

*This is perhaps a suitable moment to allude to the absence, in this discussion, of reference to what is sometimes termed rational psychology—the assumption of a separate, substantialized ego, soul, or whatever, existing side by side with particular experiences and 'states of consciousness', acting upon them and acted upon by them. In ignoring this and confining myself

it finds its further expression in psychology, which undertakes to show how this individualization proceeds, and in what aspects it presents itself. It is the theoretical counterpart of the will to exhibit in action the complete connectedness, the full organic quality, of every human being.

Of course, such a conception means something for philosophy as well as for psychology; possibly it involves a larger measure of transformation. It involves surrender of any claim on the part of philosophy to be the sole source of some particular set of truths, or the exclusive guardian of some fixed set of values. It means that philosophy be a method; not an assurance company, nor a knight errant. It means an alignment with science. I certainly would not sacrifice the depth and comprehensiveness of genuine philosophy to the partial and superficial clamor of that which sometimes officiously and pretentiously exhibits itself as Science. But there is a sense in which philosophy must go to school to the sciences; in which it must have no data save such as it receives at their hands; and be

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to the 'states of consciousness' theory and the 'natural history' theory, I may appear not only to have unduly narrowed the concerns at issue, but to have weakened my own point, as this doctrine seems to offer a special vantage ground whence to defend the close relationship of psychology and philosophy. The 'narrowing,' if such it be, will have to pass—from limits of time and other matters. But the other point I cannot concede. The independently existing soul restricts and degrades individuality, making of it a separate thing outside of the full flow of things, alien to the realities experienced and consequently in mechanical relations to them. From the standpoint of the discussion, it is vitiated by just the quality constantly objected to—that psychology has a separate piece of reality apportioned to it, instead of occupying itself with the manifestation and operation of any and all reality in concrete experiencing. From this point of view, the 'states of consciousness' attitude is a much more hopeful and fruitful one. It ignores certain considerations to be sure; and when it turns its ignoring into denial, it leaves us with curious hieroglyphics. But after all, there is a key; these symbols can be read; they must be translated into terms of the course of experience. When thus translated, selfhood, individuality, is neither wiped out nor set up as a miraculous and foreign entity; it is seen as the unity of reference and function involved in all reality when fully experienced—the pivot about which it turns—and the value in which it culminates.

hospitable to no method of inquiry or reflection not akin to those in daily use among the sciences. As long as it claims special territory of fact for itself, or peculiar modes of access to truth, so long must it occupy a dubious position. Yet this claim it has to make until psychology comes to its own. There is something in experience, something in reality, which the physical and the biological sciences do not touch; something, moreover, which is not just more experiences or more realities; but without which their materials are inexperienced, unrealized. For such sciences deal only with what might be experienced; with the content of experience. provided and assumed there be actual experience. It is psychology which tells us how this possible experience loses its barely hypothetical character, and is stamped with categorical unquestioned experiencedness; how, in a word, it becomes here and now in some uniquely individualized life. Here is the necessary transition of science into philosophy; a passage that carries the verified and solid body of the one into the large and free form of the other.

Must I say, need I say, in concluding, that I have not this evening attempted to argue, but only to propose? Would that I had such clearness that I might say, expose! My intention is not to convince, but to utter a conviction. Such an evening's address as I could make, even to this audience, might have only the semblance of logically demonstrative discourse, and at best it should develop only the emotion of persuasion. But if I may show you an attitude which it is possible to take; if I can acquaint you, even at a distance, with a certain spirit in which it is possible to pursue psychology; if I can loosen somewhat of the rigidity which perhaps the bounds and metes of the philosophic disciplines have assumed; if I can suggest that all these technical divisions and definitions are at the mercy of our historical life, and must dissolve and re-form at its human touch, I shall have abundantly satisfied my most ardent desire. To this end, I bespeak the hospitality of your thoughts.

SHOULD THE UNIVERSITY BE THE CENTRAL AUTHORITY IN A UNIFIED SCHOOL SYSTEM?*

By ALEXIS F. LANGE.

The question you have asked me to discuss with you to-day resolves itself on analysis into two distinct components. One has reference to the whole of a possible or probable system of education; the other concerns itself with the relation of a part of such a system to whatever other parts there may be or may come to be. Interpreting further and assuming, rightly I take it, that the university spoken of is our State University and also that private institutions of whatever sort do not primarily enter into the discussion, I would restate the question more explicitly thus: if, as seems likely and certainly desirable, the educational system of our state should be made an organized whole, would it be well to vest the necessary authority in the State University?

I am well aware that some malicious pessimist or cynical expert in higher criticism might possibly arrive at this meaning: shall the University be allowed to go on unifying by usurping authority? In other words, shall we approve of the sort of unity and dominion that results when cannibal meets missionary? Still, whichever interpretation one may feel disposed to adopt at the outset, it is clear that the inquiry as to authority is inseparably bound up with the problem of unification. Obviously, too, the discussion of

*A paper read before the Alameda High School Teachers' Club, May 6, 1899.

the former will have to be preceded by a consideration of the latter. Moreover, the whole subject pertains to the future, a future perhaps remote as yet, and cannot, therefore, be treated dogmatically. It must be sufficient if we seek where we are likely to find, if we try to discover the goal toward which we ought to set our faces, by taking note of present conditions and tendencies as well as of some of the guiding principles that should determine the direction of our educational thought and institutional life.

In every state of the Union public education is now looked upon as primarily a state affair, because necessary to political well-being. The constitutions of all states, Delaware and New Hampshire excepted, compel legislatures to establish a system of public schools. All permit if they do not expressly provide for the extension of the principle of education at common expense to higher schools. Our own State Constitution, by creating common schools, by guaranteeing the perpetuity of the University of California, and by empowering the legislature and municipal or district authorities to establish high schools, evening schools, normal schools, and technical schools, carries the theory of state education well on toward its logical conclusion.

And the facts, as we are proud to know, begin to correspond to the theory. Everywhere in this state, high schools are bridging the gap between the common schools and the University. Sooner or later, in case it should become necessary, California will be ready to put all public secondary schools on an equally permanent and stable basis. A high school law similar to that of Massachusetts is no longer merely a remote possibility. We may confidently look forward to such state action as will guarantee a school system which shall be complete from the kindergarten to the Ph.D., and of which the vocational schools demanded by economic and social needs shall constitute an integral part; for a truly American system can only be one system, not many, as in Germany for instance, where there is an intentional fostering of social stratification.

It is less easy to prophesy concerning the outer and inner organization and unification of this one complete system of common schools, secondary schools, and the schools constituting the University. Nevertheless it is not difficult to discern the drift of things at any rate. Already the inner unity is much greater than the distribution of power among outward organizing and controlling agencies would lead one to expect. Beneath much outward difference there is growing community of thought, of feeling, and of purpose. Indeed we are not far, I think, from a common American educational ideal. The common schools are to prepare for life in its individual and social aspects; secondary schools and the universities are to have the same aim exactly. Each of these divisions is to be organized with reference to the common ideal, each is to be so articulated with the rest as to make it possible for all the sons and daughters of the commonwealth to grow up and rise stage by stage to the station to which God has called them. By conferences, by discussion, through voluntary association and coöperation, courses of study have been devised and are being devised with relation to this fundamental conception. The teachers all over this country, the university men included, are more and more shaping their teaching in accordance with a comprehensive view of national education. Special aims are being considered in the light of ultimate aims. In so far then as unification depends on recognition of one ultimate aim, on a realizing sense of the necessity of adapting courses and departments to this aim, in so far as it depends on a growing consciousness of common educational interests, on willingness to coöperate, on ambition to get a school system that will minister in the best way to the civilization of the whole country, unification is in a fair way of being realized. The right spirit is at work creating its own body and bringing about, not dead uniformity of practice, but a vital unity of structure, of educational means, of standards of scholarship, of teaching, of supervision, and of administration.

No wonder that this movement which is gaining strength everywhere—and in no state is it stronger than in the State of California—should find expression in a more and more insistent demand for the removal of obstacles and for a system of government and administration that shall promote unity of educational effort and that shall make the whole school system the most efficient agency for bringing about the reign of reason and righteousness and competent service in private and public life. There can be no such united fruitful effort as long as any part of the whole system may be abolished by local shortsightedness or caprice. Here a change in our State Constitution would be necessary. There can be no uniformly high standard of teaching as long as power to examine and certificate teachers is divided. Here another change would have to be made, at least in our Statute Law. Uniform excellence and coöperation are out of the question as long as teachers can be appointed for other reasons than fitness, or removed for other causes than unfitness. A tribe of nomads cannot do the work of civilization successfully, however strong the bonds of tribal sentiment and ideals, however worthy and active the individual members of the tribe. There can be no unity of administration and supervision as long as superintendents are elected at the time set for gubernational elections, and special preparation and special administrative ability are not regarded as the chief qualifications for the performance of their functions.

A partial remedy for evils like these would seem to be—centralized control by the people as a whole, by the state.

Now, much as we as a people are devoted to local self-government, the principle of state control is as well established as the principle that one of the functions of the state is to provide for a system of schools. In fact, the one is a necessary corollary of the other. Accordingly, the administrative system of every state, but one, has come to have a separate educational department headed by a separate chief officer. Our own Constitution and Political Code

furnish many examples of the application of this principle, the most striking being the clause in the High School Law compelling high schools to make provision for at least one course leading to the University. Moreover, wherever the state control principle has been questioned in the courts of the country, the courts have sustained it. Let me read two decisions which state this matter very clearly and forcibly and neither of which, it should be noted, makes state control contingent upon the granting of financial aid: —

"Essentially and intrinsically the schools in which are educated and trained the children who are to become the rulers of the commonwealth are matters of state and not of local jurisdiction. In such matters the state is a unit. . . . . The authority of schools and school affairs is not necessarily a distributive one to be exercised by local instrumentalities; but on the contrary it is a central power residing in the Legislature of the State. It is for the law-making power to determine whether the authority shall be exercised by a state board of education or distributed to county, township, or city organization throughout the state." (State of Indiana *vs.* Haworth.)

"We may assert positively and without hesitation that school districts are but agents of the commonwealth and are made *quasi*-corporations for the sole purpose of the administration of the commonwealth's system of public education." (Ford *vs.* Kendall Borough School, Pa.)

It is quite in accord with such decisions that in New Jersey, Virginia, and Mississippi the state board of education appoints county superintendents, that in Virginia it has power to remove city superintendents and district trustees, that in Vermont and Alabama the state superintendent appoints the county superintendents and in New York local boards for normal schools.*

It is plain that in centralizing control we should be

*For some of the foregoing data I am indebted to W. C. Webster, Centralizing Tendencies in Educational Administration. 1897. Columbia University Publications.

doing nothing revolutionary, nothing that introduces a new principle, nothing that need disturb the shades of Patrick Henry and the heroes of Bunker Hill, at any rate not as long as there remains ample room for the exercise of local initiative and responsibility.

That we are actually progressing toward something like a central authority admits of little doubt, I believe. Centralization of power is one of the marked features of our state and national development. The current in education is only one aspect of a general movement from individualism toward some form of collectivism. The day may not be far hence, therefore, when the people of this state will delegate the functions now performed by many to a few, to a body that shall be entrusted not only with the duties performed now by the Superintendent of Public Instruction and by the State Board of Education, but with a great many more, such as organization of courses and departments for all grades of the whole system, control over the training of all teachers, the central supervision of all schools, the hearing of appeals, and the enforcement of school law, which, of course, as I indicated before, would be very different from what it is now. In other words, whoever or whatever body will act as agent of the state in the capacity of central authority, will exercise considerable legislative power with reference to the inner organization of the school system, a vast range of executive functions, and some measure of appellate jurisdiction.

In the light of such considerations as these, almost the only thing that remains for me to do is to enlarge upon the perfectly obvious answer they contain to the main question propounded for to-day's discussion. The University will not, could not, should not be the central authority whether in the near or distant future.

Leaving out of account the remote contingency that the voters of California might be called upon some day to decide between Tammany bossism and a university dictatorship, is it at all likely that the Legislature or the common will

expressed in a vote on a revised constitution would ever delegate the powers enumerated above to the University? The tendency to centralization, to mention only one reason for a negative answer, receives its impetus not so much from a desire to get the best administration as from its correlative, the desire to prevent the worst, by concentrating responsibility. Centralization and direct control by the commonwealth are parts of the same movement, which, it seems to me, is bound to continue. And even if the Board of Regents, to whom University men are directly responsible, were to be elected by popular vote, would it not still be hard to counteract the practical force of this provincial objection to their appointees: shall men who have come together from all parts of the world and who are by no means all Californianized rule over us?

But let us assume that the confidence of the people of California in their State University should go so far as to put in its charge the whole system of public education, could the University accept this charge with any prospect of success? Certainly not at present. The University is made up of men. It is not one person. Aside from the Regents, the Senate constitutes the University in its official sense. Over one hundred and fifty men are at present members of this body, a number that has to be subdivided in manifold ways even for the transaction of strictly University business. Suppose, however, the Senate could act quickly and as a unit, the multiplicity of duties involved is such that these could not be attended to by men each of whom has both hands more than full now. Waiving these points, reduce the number to that of a good working committee, relieve the members of other duties so as to give them time, can they have the detailed knowledge of affairs and of present conditions, general or local, that is necessary if the school system is to become the most efficient agency in the preparation of the youth of the state for life in its individual and social aspects? I doubt it very much.

Well, reduce the functions of the central authority,

confine them to administration and supervision. School administration requires special gifts, special training, and special experience. It is fast becoming a profession by itself. Is it at all reasonable to expect that professors of English, Latin, Greek, or even Pedagogy, would turn out to be proficient school administrators too? Then let University men at least supervise all teaching and the training of all teachers, the chair of Pedagogy serving as a correlating center. Now, I don't know but the professor of the science and art of teaching might do. The rest of us, I think, should beg to be excused. Child psychology is not the psychology of adolescence, nor this the psychology of mature minds and characters. Knowing a subject in a scientific sense and presenting it scientifically to adults is a matter very different from so adapting instruction and other educational means to each stage of growth that purposeful and powerful personalities may be looked for as the result. If there is more than one University man now who knows something about the didactics of his subject as a whole and about its relation to general educational theory and practice, it is owing to the fact that there has been more than one who has said to himself: honor and fame can wait, contributions to the sum total of human knowledge can wait, my most promising students must go to other teachers for their training for leadership; my nearest duty is to assist as best I can and know, in building up the school system of this state. Little by little experience has been gained, insight has come, helpful counsel has been given and received. There has come also the joy of seeing things grow, a wider outlook on life, a truer perspective, a deepened sense of professional and human fellowship, in short, ample compensation in many directions for what was given up. But while the self-imposed duty of school visitation has been productive of incalculable benefit to the visitors and the visited, I, for my part, have little hesitation in saying that, after all, men professionally trained for just such work could do better by the school system as a whole. The practical difficulties

alone, however, forbid any extension of the present scope of University supervision, to use an expression more convenient than precise.

If then for all these reasons the central authority cannot be vested in the University now, how about the future? The same objections apply while in one respect an additional one appears. Thanks partly to the work of this generation of teachers, the University of the future will be able to lay more stress than has been possible hitherto on special preparation for special ends in special fields. It will never surrender its own pedagogical function, I hope. But as high schools grow stronger, more and more general culture may be presupposed; university teachers will by degrees cease to be college teachers also. There will be fewer, not more men with experiential knowledge of the specific tasks devolving upon other schools.

Yes, but in the Greater University there will be a Teachers' College where men and women will be trained for administration and supervision. Could not all or at least a portion of the functions of a central authority be vested in its faculty? Not all, for the reasons already given; not a portion, for the additional reason that the University should be exposed as little as possible to the dangers lurking in the inevitable tendency to protect home industry.

No, the state is not likely to delegate the central authority to University men as such; these men could not exercise it if they would, whether at present or in the future.

Has not, however, the possibility been overlooked of vesting such authority in the Board of Regents who then might employ a body of men for purposes of administration and supervision, a body of men directly responsible to them? The answer to this question is that then the Regents would be no longer Regents of the University but of the whole school system, a reconstituted body with enlarged functions. This proposition would obviously be open to fewer objections than the one we are discussing. I believe though that a better plan still—merely to suggest another alternative,

not to pose as a statesman—would be something like this: three non-partisan boards, one for each division of the school system; three directors, one for each division, appointed by their respective boards to serve during good behavior; the President of the University to be one of the three, of course, and the others, men of the same calibre, each with special qualifications for his particular duties; all three of them to be voting members *ex-officio* of each board, of which the governor would also be an *ex-officio* member; the state to be further represented by five or seven additional members for each board, who should serve at least five years each but not more than say ten. Joint sessions might be provided for at which a staff of school visitors might be appointed and their reports received and acted on.

Whether or not these are wild fancies of an idle brain, this is the direction our thoughts should take, I think, if we are casting about for a central authority that will ensure efficiency, coöperation between system and system, and the unhindered development of each according to its type. We must never allow ourselves to forget—and here lies really my main argument—that our school system is trinitarian not unitarian, that the three systems composing it are one in the sense that they all prepare for life in its individual and social aspects and so have enough in common to permit one to prepare for the others. They are one in the sense that each implies the rest and has no full existence without the rest. They are not one in the sense that each represents merely a lower or a higher stage than the others. They are coördinate systems and must be maintained as such. In thought, in learning, in the application of true principles to the problems of life and the riddles of the universe, the mission of a university is indeed to be a true authority, but—to the end that men may become their own authorities.

ANTHOLOGY OF UNIVERSITY REFORM.*

By Isaac Flagg.

It is my purpose to present, briefly and summarily, certain negative aspects of a large and momentous subject. I shall not, in my own remarks, directly discuss or enumerate the beneficent effects and high advantages of academic freedom: my aim is rather to call attention to some of the evils engendered by the restriction of it. The questions involved are purely practical ones, dealing less with matters of opinion than with matters of fact. With vain educational theories we are not concerned, except so far as they may be incidentally denounced. We have not to ask what studies, beyond those which by common consent are needed to form a preliminary basis, may be regarded as more or less valuable for purposes of culture—a question which in the nature of things admits of no answer, seeing that what is food for one mind is bane for another; but recognizing the equal dignity and value of all branches of liberal learning when sincerely and rationally pursued, and their equal worthlessness when perverted to uses of self-deception and unreality, we have simply to inquire, What phenomena that may be described as unwholesome and vicious, regularly observed in connection with existing systems of higher education, are mainly attributable to some form of gratuitous prescription, open or disguised?

*Selections read, and parts of an address delivered before the California Union, April 18, 1899.

THE TRANSFORMATION OF THE COLLEGE.*

The American college in its origin was essentially a church institution. When the people of the Connecticut colony began to talk about an institution of learning, it was expressly proposed that they should found a "school of the Church," by contributions from the several Congregational churches. The sole object, indeed, was to provide a learned ministry, that every church might have "a scholar to its minister." Even when, years later, the scope of the institution was somewhat broadened, its object was still declared to be "the upholding and propagating of the Christian Protestant religion, by a succession of learned and orthodox men," their development into supporters of "orthodoxy" being thus made an end of their education equally with their mastery of knowledge. . . . . Church influence was scarcely less prominent in the early history of Harvard . . . . . In its early period "the College," according to President Quincy, "was conducted as a theological institution, having religion for its basis and chief object."

The college in this country was thus originally a school for the training of young men to become ministers of what was virtually the Established Church. In fact, in the early days the education of a youth almost implied his preparation for the ministry. So subordinate were the other "learned professions" that during the first half century of Yale College only thirty of its graduates became physicians, because medical service in New England was mainly supplied by the clergy. . . . . A full half of all the graduates from Yale during the first fifty years of its existence became Congregational clergymen, and the proportion was even larger at Harvard in its early history.

Under such circumstances the construction of a college curriculum was a very simple matter. The college was really only a theological seminary, and a Board of clerical

* *The Nation*, November 19, 1885.

Trustees were merely called upon to decide what were the studies best calculated to fit young men for the ministry. It was natural and proper enough that they should proceed upon the theory that, the end being to make a minister of the student, all students should pursue the same course. Hebrew and theology thus became features of the curriculum as naturally as Latin and Greek, and every student was as much bound to take the former as the latter.

The ancient theory of the college was thus that of an institution to turn out "orthodox" ministers. The modern theory makes it an institution to ground young men in the elements of an education which shall fit them for any pursuit. The ancient theory is exemplified in the foundation of Yale; the modern in the present management of Harvard. The Cambridge student has scarcely entered the institution before he is called upon to decide for himself what course of study he will pursue. . . . .

LIBERTY IN EDUCATION.*

A university of liberal arts and sciences must give its students three things: I. Freedom in choice of studies. II. Opportunity to win academic distinction in single subjects or special lines of study. III. A discipline which distinctly imposes on each individual the responsibility of forming his own habits and guiding his own conduct.

The infinite variety of form and feature, which we know human bodies to be capable of, presents but a faint image of the vastly deeper diversities of the minds and characters which are lodged in these unlike shells. To discern and take due account of these diversities no human insight or wisdom is sufficient, unless the spontaneous inclinations, natural preferences, and easiest habitual activities of each individual are given play. It is for the happiness of the individual and the benefit of society alike, that these mental diversities should be cultivated, not suppressed.

*President Eliot, of Harvard University. From an address delivered before the Nineteenth Century Club of New York, in 1885.

The individual enjoys most that intellectual labor for which he is most fit; and society is best served when every man's peculiar skill, faculty, or aptitude is developed and utilized to the highest possible degree. The presumption is, therefore, against uniformity in education, and in favor of diversity at the earliest possible moment. What determines that moment? To my thinking, the limit of compulsory uniform instruction should be determined by the elementary quality and recognized universal utility of the subjects of such instruction. For instance, it is unquestionable that every child needs to know how to read, write, and, to a moderate extent, cipher. Therefore primary schools may have a uniform programme. One might naturally suppose that careful study of the mother-tongue and its literature would be considered a uniform need for all youth; but as a matter of fact there is no agreement to this effect. The English language and literature have hardly yet won a place for themselves in American schools. Only the elements of two foreign languages and the elements of algebra and geometry can be said to be generally recognized as indispensable to the proper training of all young people who are privileged to study beyond their seventeenth year. There is no consent as to the uniform desirableness of the elements of natural science, and there is much difference of opinion about the selection of the two foreign languages, the majority of educated people supposing two dead languages to be preferable, a minority thinking that living languages are permissible. The limit of that elementary knowledge, of which by common consent all persons who are to be highly educated stand in need, is therefore a narrow one, easily to be reached and passed, under respectable instruction, by any youth of fair ability before he is eighteen years old. There, at least, ceases justifiable uniformity in education. There, at least, election of studies should begin, and the safest guides to a wise choice will be the taste, inclination, and special capacity of each individual.

There exist certain natural guides and safeguards for every youth who is called upon in a free university to choose his own studies. In the first place, he cannot help taking up a subject, which he has already studied, about where he left it off, and every new subject at the beginning and not at the middle. Secondly, many subjects taught at a university involve other subjects, which must therefore be studied first. Thus no one can get far in physics without being familiar with trigonometry and analytic geometry; chemical analysis presupposes acquaintance with general chemistry, and palaeontology acquaintance with botany and zoölogy; no one can study German philosophy to advantage unless he can read German, and no student can profitably discuss practical economic problems until he has mastered the elementary principles of political economy. Every advanced course, whether in language, philosophy, history, mathematics, or science, presupposes acquaintance with some elementary course or courses. Thirdly, there is a prevailing tendency on the part of every competent student to carry far any congenial subject once entered upon. To repress this most fortunate tendency is to make real scholarship impossible. So effective are these natural safeguards against fickleness and inconsecutiveness in the choice of studies, that artificial regulation is superfluous.

I had experience as an undergraduate of a college course almost wholly required; for I happened upon nearly the lowest stage to which the elective system in Harvard College ever fell, after its initiation in 1825. During the nine years from 1854 to 1863 I became intimately acquainted with the working of this mainly prescribed curriculum from the point of view of a tutor and assistant professor who had a liking for administrative details. After a separation from the University of six years, two of which were spent in Europe as a student and four at the Massachusetts Institute of Technology as a professor, I went back as president in 1869, to find a tolerably broad elective

system already under way. The wishes of the governing boards and external circumstances all favoring it, the system was rapidly developed. Required studies were gradually abolished or pushed back; so that first the Senior year was made completely elective, then the Junior, then the Sophomore, and finally in June last the Freshman year was made chiefly elective. No required studies now remain except the writing of English, the elements of either French or German (one of these two languages being required for admission), and a few lectures on chemistry and physics. None of the former exclusive staples, Greek, Latin, mathematics, logic, and metaphysics, are required, and no particular combinations or selections of courses are recommended by the faculty. I have therefore had ample opportunity to observe at Harvard the working of almost complete prescription, of almost complete freedom, and of all intermediate methods. . . . . .

The briefest form in which I can express the general result of my observation is this: I have never known a student of any capacity to select for himself a set of studies, covering four years, which did not apparently possess more theoretical and practical merit for his case than the required curriculum of my college days. Every prescribed curriculum is necessarily elementary from beginning to end, and very heterogeneous. Such is the press of subjects that no one subject can possibly be carried beyond its elements; no teacher, however learned and enthusiastic, can have any advanced pupils; and no scholar, however competent and eager, can make serious attainments in any single subject. Under an elective system the great majority of students use their liberty to pursue some subject or subjects with a reasonable degree of thoroughness. This concentration upon single lines develops advanced teaching, and results in a general raising of the level of instruction. Students who have decided taste for any particular subject wisely devote a large part of their time to that subject and its congeners. Those who have already decided upon their

profession wisely choose subjects which are related to, or underlie, their future professional studies; thus, the future physician will advantageously give a large share of his college course to French, German, chemistry, physics, and biology; while the future lawyer will study logic, ethics; history, political economy, and the use of English in argumentative writing and speaking. Among the thousands of individual college courses determined by the choice of the student in four successive years, which the records of Harvard College now preserve, it is rare to find one which does not exhibit an intelligible sequence of studies. It should be understood in this connection that all the studies which are allowed to count toward the A.B. at Harvard are liberal or pure, no technical or professional studies being admissible.

Two common objections to an elective system shall next have our attention. The first is often put in the form of a query. Election of studies may be all very well for conscientious or ambitious students, or for those who have a strong taste for certain studies; but what becomes, under such a system, of the careless, indifferent, lazy boys who have no bent or intellectual ambition of any sort? I answer with a similar query: What became of such boys under the uniform compulsory system? Did they get any profit to speak of under that régime? Not within my observation. It really does not make much difference what these unawakened minds dawdle with. There is, however, much more chance that such young men will get roused from their lethargy under an elective system than under a required. When they follow such faint promptings of desire as they feel, they at least escape the sense of grievance and repugnance which an arbitrary assignment to certain teachers and certain studies often creates. An elective system does not mean liberty to do nothing. The most indifferent student must pass a certain number of examinations every year. He selects perhaps those subjects

in which he thinks he can pass the best examinations with the smallest amount of labor; but in those very subjects the instruction will be on a higher plane than it can ever reach under a compulsory system, and he will get more benefit from them than he would from other subjects upon which he put the same amount of labor but attained less success. It is an important principle in education, from primary school to university, that the greater the visible attainment for a given amount of labor the better; and this rule applies quite as forcibly to a weak student as to a strong one. Feeble or inert students are considerably influenced in choosing their studies by the supposed quality of the teachers whom they will meet. As a rule they select the very teachers who are likely to have the most influence with them, being guided by traditions received from older students of their sort. It is the unanimous opinion of the teachers at Cambridge that more and better work is got from this class of students under the elective system than was under the required.

Having said thus much about the effects of free choice of studies upon the unpromising student, I must add that the policy of an institution of education, of whatever grade, ought never to be determined by the needs of the least capable students; and that a university should aim at meeting the wants of the best students at any rate, and the wants of inferior students only so far as it can meet them without impairing the privileges of the best. A uniform curriculum, by enacting superficiality and prohibiting thoroughness, distinctly sacrifices the best scholars to the average. Free choice of studies gives the young genius the fullest scope without impairing the chances of the drone and the dullard.

THE NEW EDUCATION.*

After more than half a century of experiment the

*Professor George Herbert Palmer, of Harvard University. *The Andover Review*, November, 1885.

Harvard Faculty are convinced of the worth of the elective system. In their eyes, option is an engine of efficiency. People generally treat it as a concession. Freedom is confessedly agreeable; restive boys like it; let them have as much as will not harm them. But the Harvard authorities mean much more than this. They have thrown away that established principle of American education, that every head should contain a given kind of knowledge; and having already organized their college from the top almost to the bottom on a wholly different plan, they now declare that their new principle has proved so safe and effective that it should supplant the older method.

When, in 1870, I left Andover Seminary and came to teach at Harvard, I distrusted the more extreme developments of the elective system. Up to 1876, I opposed the introduction of voluntary attendance at recitations. Not until four years ago did I begin to favor the remission of Greek in the requisites for entrance. In all these cases my party was defeated; my fears proved groundless; what I wished to accomplish was effected by means which I had opposed. I am therefore that desirable persuader, the man who has himself been persuaded.

Harvard has reached her present great prosperity by becoming the pioneer in a general educational movement. What made the movement general was the dread of flimsy study. Our world is larger than the one our grandfathers inhabited; it is more minutely subdivided, more finely related, more subtly and broadly known. . . . . As the field of knowledge widened, and men began to notice a difference between its contents and those of the college curriculum, an effort was made to enlarge the latter by adding subjects from the former. Modern languages crept in, followed by sciences, political economy, new departments of history, literature, art, philosophy. For the most part, these were added to the studies already taught. But

the length of college days is limited. The life of man has not extended with the extension of science. To multiply subjects was soon found equivalent to cheapening knowledge. Where three subjects are studied in place of one, each is pushed only one-third as far. A crowded curriculum is a curriculum of superficialities, where men are forever occupied with alphabets and multiplication tables,—elementary matters, containing little mental nutriment. Thorough-going discipline, the acquisition of habits of intellectual mastery, calls for acquaintance with knowledge in its higher ranges, and there is no way of reaching these remoter regions during the brief season of college life except by dividing the field and pressing along paths where personal friction is least.

The old conception had been that there were certain matters, a knowledge of which constituted a liberal education. Compared with the possession of these, the temper of the receiving mind was a secondary affair. This view became untenable. Under the new conditions, college faculties were forced to recognize personal aptitudes, and to stake intellectual gains upon them. In assessing the worth of studies, attention was thus withdrawn from their subject-matter and transferred to the response they called forth in the apprehender. Hence arose a new ideal of education, in which temper of mind had preëminence over *quaesita*, the guidance of the powers of knowing over the stores of matters known. The new education has accordingly passed through two stages of development: first, in order to avoid superficiality when knowledge was coming in like a flood, it was found necessary to admit choice; secondly, in the very necessity of this admission was disclosed a more spiritual ideal of the relation of the mind of man to knowledge.

And this new ideal, I hold, should now commend itself not as a thing good enough if collateral, but as a principle, organic and exclusive. To justify its dominance a single

compendious reason is sufficient: it uplifts character as no other training can, and through influence on character it ennobles all methods of teaching and discipline. We say to our student at Harvard, "Study Greek, German, history, or botany—what you will; the one thing of consequence is that you should will to study something." The moral factor is thus put forward, where it belongs. The will is honored as of prime consequence. Other systems treat it as a merely concurrent and auxiliar force. They try to smuggle it into operation wrapped in a mass of matter-of-course performances. It is the distinctive merit of the elective system that it strips off disguises, places the great facts of the moral life in the foreground, forces the student to be conscious of what he is doing, permits him to become a partaker in his own work, and makes him perceive that gains and losses are immediately connected with a volitional attitude.

I am not describing theoretic advantages. A manlier type of character actually appears as the elective principle extends. The signs of the better life are not easy to communicate to those who have not lived in the peculiar world of a college. A greater ease in uprightness, a quicker response to studious appeal, a deeper seriousness,—still keeping relish for merriment,—a readier amenability to considerations of order, an increase of courtesy, a growing disregard of coarseness and vice, a decay of the boyish fancy that it is girlish to show enthusiasm,—tendencies in these directions, hardly perceptible to others, gladden the watchful heart of a teacher and assure him that his work is not returning to him void.

Nobody who has taught both elective and prescribed studies need be told how the instruction in the two cases differ. With perfunctory students, a teacher is concerned with devices for forcing his pupils onward. Teaching becomes a secondary affair; the time for it is exhausted in

questioning possible shirks. Information must be elicited, not imparted. The text-book, with its fixed lessons, is a thing of consequence. It is the teacher's business to watch his pupils, to see that they carry off the requisite knowledge; their business, then, it soon becomes to try to escape without it. Between teacher and scholar there goes on an ignoble game of matching wits, in which the teacher is smart if he can catch a boy, and the boy is smart if he can know nothing without being found out. Because of this supposed antagonism of interests American higher education seldom escapes an air of unreality. We seem to be at the opera bouffe.

DISSIPATION OF MIND.*

Nor indeed am I supposing that there is any great danger, at least in this day, of over-education; the danger is on the other side. I will tell you, gentlemen, what has been the practical error of the last twenty years,—not to load the memory of the student with a mass of undigested knowledge, but to force upon him so much that he has rejected all. It has been the error of distracting and enfeebling the mind by an unmeaning profusion of subjects; of implying that a smattering in a dozen branches of study is not shallowness, which it really is, but enlargement, which it is not; of considering an acquaintance with the learned names of things and persons, and the possession of clever duodecimos, and attendance on eloquent lectures, and membership with scientific institutions, and the sight of the experiments of a platform and the specimens of a museum, that all this was not dissipation of mind, but progress. All things now are to be learned at once, not first one thing, then another, not one well, but many badly. Learning is to be without exertion, without attention, without toil; without grounding, without advance, without finishing. There is to be nothing individual in it; and this, forsooth, is the wonder of the age. . . . Whether

*Cardinal Newman. From the Sixth Discourse on University Teaching, 1852.

it be the school boy or the school girl, or the youth at college, . . . all have been the victims in one way or other of this most preposterous and pernicious of delusions.

WHAT IS A LIBERAL EDUCATION?*

The general growth of knowledge and the use of new literatures, arts, and sciences during the past two hundred and fifty years have made it necessary to define anew liberal education, and hence to enlarge the signification of the degree of Bachelor of Arts, which is the customary evidence of a liberal education. Already the meaning of this ancient degree has quietly undergone many serious modifications; it ought now to be fundamentally and openly changed.

I wish to demonstrate, first, that the number of school and college studies admissible with equal weight or rank for this highly valued degree needs to be much enlarged; secondly, that among admissible subjects a considerable range of choice should be allowed from an earlier age than that at which choice is now generally permitted; and, thirdly, that the existing order of studies should be changed in important respects. The phrase "studies admissible with equal weight or rank" requires some explanation. I use it to describe subjects which are taught with equal care and completeness, are supported by the same prescriptions, and win for their respective adherents equal admission to academic competitions, distinctions, and rewards, and equal access to the traditional goal of a liberal education, the degree of Bachelor of Arts. Coördinate studies must be on an equal footing in all respects: of two studies, if one is required and the other elective, if one is taught elaborately and fully and the other only in its elements, if honors and scholarships may be obtained through one and not through the other, if one may be counted toward the valuable degree of Bachelor of Arts and the other only toward the

*President Eliot. *The Century*, June, 1884.

very inferior degree of Bachelor of Science or Bachelor of Philosophy, the two studies are not coördinate—they have not the same academic weight or rank.

A new subject can force its way only very gradually into the circle of the arts called liberal. For instance, it was more than a hundred years after the widespread revival of Greek in Europe before that language was established at Paris and Oxford as a regular constituent in the academic curriculum; and physics and chemistry are not yet fully admitted to that curriculum, although Robert Boyle published his "New Experiments touching the Spring of the Air" in 1660, Lavoisier analyzed water in 1783, Galvani discovered animal electricity in 1790, and John Dalton published his "New System of Chemical Philosophy" in 1808. Indeed, so stout and insurmountable seem the barriers against progress in education, as we look forward, that we are rather startled on looking back to see how short a time what is has been.

It is the received opinion that mathematics is an indispensable and universal constituent of education, possessing the venerable sanction of immemorial use; but when we examine closely the matters now taught as mathematics in this country, we find that they are all recent inventions, of a character so distinct from the Greek geometry and conic sections which with arithmetic represented mathematics down to the seventeenth century, that they do not furnish the same mental training at all. As Whewell pointed out forty years ago, modern mathematics—algebra, analytic geometry, the differential and integral calculi, analytical mechanics, and quaternions—has almost put out of sight the ancient form of mathematical science. . . . The name of this well-established constituent of the course of study required for the baccalaureate is old, but the thing itself is new. A brief citation from the conclusion of Whewell's prolix discussion of the educational value of mathematics, in his treatise entitled "Of a Liberal

Education," will explain and fortify the statement that the mental discipline furnished by the mathematics of Euclid and Archimedes was essentially different from that furnished by the analytical mathematics now almost exclusively in use:

> On all these accounts, then, I venture to assert that while we hold mathematics to be of inestimable value as a permanent study by which the reason of man is to be educated, we must hold also that the geometrical forms of mathematics must be especially preserved and maintained, as essentially requisite for this office; that analytical mathematics can in no way answer this purpose, and, if the attempt be made so to employ it, will not only be worthless, but highly prejudicial to men's minds.

The modern analytical mathematics, thus condemned by Whewell, is practically the only mathematics now in common use in the United States.

I venture to inquire next how long Greek has held its present place in the accepted scheme of liberal education. Although the study of Greek took root in Italy as early as 1400, and was rapidly diffused there after the fall of Constantinople in 1453, it can hardly be said to have become established at Paris as a subject worthy the attention of scholars before 1458, or at Oxford before the end of the fifteenth century. At Paris, for many years after 1458, Greek was taught with indifferent success, and its professors, who were mostly foreigners, were excluded from the privileges of regency in the University. Indeed, the subject seems to have long been in the condition of what we should now call an extra study, and its teachers were much in the position of modern-language teachers in an American college, which does not admit them to the faculty. . . . It is certain that in 1578 the instruction in Greek which was given to undergraduates at Cambridge started with the elements of the language; and it is altogether probable that Greek had no real hold in the English grammar schools until the end of the sixteenth century. . . . It took two hundred years, then, for the Greek

language and literature gradually to displace in great part the scholastic metaphysics which, with scholastic theology, had been for generations regarded as the main staple of liberal education; and this displacement was accomplished only after the same sort of tedious struggle by which the new knowledge of the eighteenth and nineteenth centuries are now winning their way to academic recognition. The revived classical literature was vigorously and sincerely opposed as frivolous, heterodox, and useless for discipline; just as natural history, chemistry, physics, and modern literatures are now opposed. Precisely the same arguments were used by the conservatives of that day which are brought forward by the conservatives of to-day, only they were used against classical literature then, while now they are used in its support.

In education, as in other things, I am a firm believer in the principle of expending the least force which will accomplish the object in view. If a language is to be learned, I would teach it in the easiest known method, and at the age when it can be easiest learned. But there is another theory which is often acted upon, though seldom explicitly stated—the theory that, for the sake of discipline, hardness that is avoidable should be deliberately imposed upon boys; as, for instance, by forcing a boy to study many languages who has no gifts that way and can never attain to any mastery of them. To my mind the only justification of any kind of discipline, training, or drill is attainment of the appropriate end of that discipline. It is a waste for society, and an outrage upon the individual, to make a boy spend the years when he is most teachable in a discipline the end of which he can never reach, when he might have spent them in a different discipline, which would have been rewarded by achievement. Herein lies the fundamental reason for options among school as well as college studies, all of which are liberal. A mental discipline which takes no account of differences of capacity and taste is not well

directed. It follows that there must be variety in education instead of uniform prescription. To ignorant or thoughtless people it seems that the wisdom and experience of the world ought to have produced by this time a uniform course of instruction good for all boys and made up of studies permanently preëminent; but there are two strong reasons for believing that this convenient result is unattainable: in the first place, the uniform boy is lacking; and in the second place, it is altogether probable that the educational value of any established study, far from being permanently fixed, is constantly changing as new knowledge accumulates and new sciences come into being.

Two objections to the views which I have been presenting occur at once to every conservative mind. I have often been met with the question: Is this traditional degree of Bachelor of Arts, which for three huudred years, at least, has had a tolerably clear meaning, to be deprived of all exact significance, so that it will be impossible to tell what one who holds the degree has studied? I reply that the degree will continue to testify to the main fact to which it now bears witness, namely, that the recipient has spent eight or ten years, somewhere between the ages of twelve and twenty-three, in liberal studies. . . .

A second objection is expressed in the significant question: What will become of Greek and Latin if all these new subjects are put on an equality with them? Will Greek and Latin, and the culture which they represent, survive the invasion? To this question I answer first, that it is proposed, not to substitute new subjects for the old, but only to put new subjects beside the old in a fair competition, and not to close any existing road to the degree of Bachelor of Arts, but only to open new ones; secondly, that the proposed modification of the present prescription of Greek and Latin for all boys who are to go to college will rid the Greek and Latin classes of unwilling and incapable pupils, to the great advantage of the pupils who

remain; and thirdly, that the withdrawal of the artificial protection now given to the Classics will cause the study of classical antiquity to rely—to use the well-chosen words of Professor Jebb on the last page of his life of Bentley—"no longer upon a narrow or exclusive prescription, but upon a reasonable perception of its proper place amongst the studies which belong to a liberal education." The higher the value which one sets on Greek and Latin as means of culture, the firmer must be his belief in the permanence of those studies when they cease to be artificially protected. In education, as elsewhere, it is the fittest that survives. The Classics, like other subjects, must stand upon their own merits; for it is not the proper business of universities to force subjects of study, or particular kinds of mental discipline, upon unwilling generations; and they cannot prudently undertake that function, especially in a country where they have no support from an established church, or from an aristocratic organization of society, and where it would be so easy for the generations, if repelled, to pass the universities by.

VIEWS OF A GRECIAN.*

The first thing that struck me when I began to teach here in 1856 was what I had felt as a grievance as an undergraduate, that under the required system the standard of scholarship in each study was set, not by what the best and most enthusiastic scholars could do, but by what could reasonably be expected of the ordinary student of good intentions. This threw a depressing chill upon all who felt themselves able to do twice as much work as the class was doing, and almost everybody contented himself with the required mediocrity. During the recitation hour, in most studies, the better scholars were compelled to listen the greater part of the time to the talk of classmates who knew less than themselves and who seldom said anything of

* Professor William Watson Goodwin, of Harvard University. From an address delivered before the Phi Beta Kappa Society at Cambridge, Mass., in 1891.

interest or value. . . . . The result was that nothing worthy of the name of high scholarship could be expected *as a right* in any department to which this system was applied, and the highest rank was often by necessity awarded to mere mediocrity.

It had long been felt by many to whom this state of things seemed intolerable,—by none more keenly than by the teachers of the Classics and the Mathematics, who were commonly believed to hold a monopoly under the required system,—that the only escape from the increasing evils which surrounded us was to be found in a plan by which no student should be required to take all studies, but every student should be allowed to give much more time and attention to certain branches which he elected than he could give to any of his studies before. It was clearly recognized that no partial and restricted scheme of elective study could help high scholarship.

It need hardly be said that the standard of scholarship in every department was at once raised by this reform. It sprang up of itself the moment the old pressure was taken off. No teacher was now expected to set a standard for his best scholars which every faithful dunce could reach. The "faithful dunce" was now always supposed to be "somewhere else;" the standard of scholarship ignored him completely, and his day of power was over. I cannot emphasize too strongly that the chief merit of the present elective system is not that it lets students study what they like and avoid what they dislike, but that it opens to all a higher and wider range of study in every field; in short, it has made really high scholarship possible.

STATUS OF THE GREEK QUESTION.*

The great and imperishable service which Harvard College has rendered to American education in the last fifteen

* Professor Edmund J. James, of the University of Pennsylvania, now of the University of Chicago. *The Popular Science Monthly*, May, 1887.

years consists in two things. It has extended enormously the range of subjects in which instruction is offered within its own limits, and thereby made it absolutely necessary for all other institutions which did not wish to lag hopelessly in the rear to do the same. . . . . The other service is one of equal if not of greater value, *viz.*, the full recognition of the equivalency of different lines of study from a liberal point of view, thus practically giving force to a conviction which almost always forces itself upon one as the result of any extended study of the art and science of education. This recognition has been given in two different forms, though at bottom they are parts of one and the same general plan. It has been given by the general introduction of the elective-study system within the college itself, thus recognizing the equivalency from a liberal point of view of all lines of study. . . . . It has now gone still further, and recognizes the full equivalency of different lines of preparatory study before the student comes to the college itself. Every one who has taken the requirements for admission and studied them carefully, is surprised to learn how many different combinations may be made, all of which are recognized as equally fitting a boy to take a liberal course of study. The difference between the new list and the old is very great, and may be properly denominated as epoch-making. The most important feature, and the one which interests us most in this immediate connection, is the fact that it is now possible to make up a combination which will be accepted as satisfying all requirements but which shall contain no Greek.

Harvard, however, was not the first of our institutions of high rank to discard Greek from the list of its requirements for the degree of A.B. Johns Hopkins University led the way in this revolution, as in so many other good things. . . . . Johns Hopkins allows the substitution of modern languages for Greek in the course for the degree of A.B.—*i.e.*, it has from the first recognized the

equivalency of different lines of work for the degree which crowns the course of liberal arts. The two institutions in America which, taken all in all, each in its own way, stand at the head of our educational system, join, then, in this revolutionary step. How long can the other institutions hold out along the old lines? The fortress which the defenders of the old system have recognized as the key to the situation has fallen, it is a mere question of time how soon the others must capitulate; and we may be sure that, when they do, it will be without conditions.

If we take a glance at conditions in foreign countries, we can better understand how thoroughly in sympathy with the general progress of education in our modern world this new step is, and, consequently, how exceedingly sure it is of never being retraced. . . . . When we examine the requirements for the degree of Master of Arts, which is the German degree which corresponds most closely with our A.B., we find that not a single one of the German universities requires any knowledge of Greek whatever for this degree. It is now sixteen years since the requirement of Greek for this degree and that of Ph.D. (with which the A.M. is always given) was dropped in Prussia; and although some of the German professors would like to see Greek restored to its place in the list of requirements, because it would reduce the number of students at the universities, and some others would like to see it restored for the same reasons which affect the opinion of some American educators, there is no more probability of its being restored than there is that the study of Hebrew or Sanskrit will be made compulsory.

It will not do to say that we can have a separate degree for those who have not studied Greek. The subject is no longer important enough in comparison with other studies to deserve a separate degree; and, as long as we make this distinction, we shall practically close the doors of many of

our institutions to numbers of students who would otherwise be found in our academic halls.

MORAL ASPECTS OF PRESCRIPTION.*

In the history of American university-reform, so far as liberal studies are concerned, the cause of academic freedom *vs.* prescription has come to be at the present time practically identical with the cause of one degree *vs.* a plurality of degrees. In those institutions which still persist in the attempt to set a different value upon various courses of liberal study by means of a variety of degrees, the evils that we have to consider are constantly present in full force. For reasons, however, which are not far to seek, the most flagrant illustration of their demoralizing effects is furnished by the course leading to the degree of Bachelor of Arts, and especially by the study of Greek, which is characteristic of that course. There is, indeed, no subject in the whole curriculum but suffers in due measure from the infection; nevertheless, the position and nature of this one study are such that an extended experience as teacher of the Greek language affords the best possible opportunity for observing the educational malady which we denominate prescription.

When the revolt against the despotism of a perfunctory classical discipline in American colleges began to take active shape about half a century ago, it assumed two forms: (1) that of a modification of the traditional requirements for the degree of A.B. in existing colleges; and (2) in some newly-founded institutions the form of multiplication of degrees. Under the latter scheme, those who sought the A.B. degree were substantially under the same regimen as before. Candidates for the next degree in the series (its name, whatever it might be, was intended to convey a negative rather than any positive significance) must have Latin, but were allowed to offer a substitute for

* Title of the address before the California Union.

Greek. For other degrees neither Greek nor Latin was demanded. Although prescribed studies still abounded within the several curricula thus marked off, the plan as a whole afforded a measure of relief from the pressure which had become too great to bear. But the scheme was attended with a double injustice: it denied to many an able and earnest student of cultivated mind the only degree that was widely recognized as the badge of a collegiate liberal education, while bestowing it indiscriminately upon the motley throng who were content to be whipped through the old-fashioned curriculum; and it left the genuine teacher of Greek, and those learners who, under a free system, might have begun this study fairly and pursued it to the best advantage beyond its elementary stages, still floundering in the mire of prescription. It should be observed that this whole plan was of the nature of a compromise. The reformers said: "We demand for our youth the right to pursue a collegiate course of liberal studies unincumbered by the deadweight of a subject of which they can make nothing, and for which they do not care." The conservatives replied: "Very well; only you must not make use of our degree, which we take to stand for a classical training, and which shall never be taken to stand for anything else if we can help it." Thus, while justice was not done, the burden was lightened for all except the candidates for the degree of Bachelor of Arts. They were in the same predicament as ever; though, fortunately for the community at large, they were now comparatively less numerous than they had formerly been.

Cornell University was founded in 1868, in a spirit of protest against educational bigotry, and with a sincere and earnest purpose. But so far as classical studies were concerned, the old slavery was there in the system of multiplied degrees, inherited from Ann Arbor. I found this organization at Ithaca firmly intrenched behind a specious theory then rife, and even now sometimes feebly asserted, that a

person evinces a taste for Greek studies by becoming a candidate for the degree for which such studies are prescribed. . . . . During seventeen years of service as professor of Greek at Cornell, I had frequent and ample opportunities of testing the validity of this doctrine. At times a feeling of admiration for the dogged persistency with which students would chew at the husk and bran of a subject they could neither digest nor relish, coming up year after year for re-examination, after being dropped or rejected, for the sake of winning the coveted diploma—a certain admiration, I say, for the fortitude of the individual was at times mingled with the indignation that I felt at the folly and perversity of a system which entailed such needless waste of precious time and energy. My requirements were not high, but they were genuinely exacted, as far as could be done under the formidable counter-pressure of public opinion. To deny to the unqualified the privilege of being admitted or passed in Greek was to deny to them the degree of Bachelor of Arts; and neither the candidate nor the community could comprehend the difference between a real and an unreal standard in a subject that has lost touch with common-sense traditions. Greek was a prescribed study during two years of the collegiate course. Vainly, more than once, I appealed to the Faculty to authorize the giving of at least one of those years to freedom. The proposal was the more stubbornly resisted because the facts and arguments presented were unanswerable. Moderate in itself, it was doubtless felt to be revolutionary in tendency. Yet when I left Ithaca in 1888, the day of deliverance was nearer at hand than I imagined. Four years after the inauguration of President Schurman in 1892, a free academic curriculum was adopted at Cornell, leading to one degree. In his fifth annual report the President of the University touches upon this reform in well-chosen language. He says: "The principle involved . . . is the recognition of the equal value of different courses of liberal study, and the futility, as well as the

inutility, of attempting to differentiate them by a variety of degrees. Whatever the studies selected, thorough work is the important consideration."

At the University of California the old wrongs and difficulties are inevitably encountered by that considerable number of persons who enter annually for the old degree. But the situation is in some respects worse here now than it was under the unreformed conditions at Harvard forty years ago. There was then less dispersion of mental effort, more concentration was possible then than now in the preparatory course, because since then the number of subjects that must be studied at one time in the preparatory school, under the existing scheme, has been increased. Again, a larger proportion of the candidates at that time and in that part of the country had been fitted for college at schools which had the name of imparting, according to methods which still extensively prevail, thorough instruction in the rudiments of Greek and Latin. In 1860, at Andover Phillips Academy, I was one of a large class of boys who left that year to enter Dartmouth, Yale, Harvard, and other New England colleges. Of the fifty members of that class, the character of whose daily performance I can distinctly remember, there were perhaps fifteen who could extract something intelligible from a Greek book, after five weekly recitations of an hour and a half each during two years and a half, and of whom it might not fairly be said that they had been wronged by the imposition of an exclusive, uncongenial discipline. But the fifty as a whole had received far better instruction than the fifty have received who are admitted annually now to the University of California on the same theory. There was also an exceptionally large percentage of the Andover pupils who might have been expected, through force of early associations and inherited disposition, to profit measurably by a classical training. Moreover, at that time the charms of a college diploma were not heightened by the allurement of a

teacher's certificate granted on the completion of certain formal requirements.

Once determined, by whatever motives prompted, to win one or both of these promised emblems of distinction, the school boy or the school girl drops into a groove, along which he continues to slide by sheer inertia, unchecked by sound and searching tests of proficiency; and, as time goes on, there is less and less room for escape from a meaningless discipline, in proportion as its futility, under any scrutiny both competent and disinterested, would become more and more apparent. The many-degree system regularly begets a disposition to swell and laud the numbers of those who aim at the most desired of the degrees, at the sure cost of degrading and corrupting particularly the one study which holds the key to it. Both Greek and Latin are prescribed. Latin is begun first in the school; and soon the exhortation comes to take Greek, because Greek is such a great and glorious thing, before the pupil has proved his ability, or often after he has proved his inability, to deal successfully with the elements of Latin only. Both languages are prescribed for a year longer in the University; the requirements for admission are chiefly of a formal character; and classical studies are continued under circumstances which do not allow them to be conducted in a profitable or worthy manner, owing partly to the abuses tolerated during the preparatory course, partly to the other prescriptions and distractions of the collegiate curriculum. Arrived at the point of choosing the group-elective so-called, many who are totally unqualified for scholarly performance—students who have never been taught how to study, so destitute of power as to be unconscious of their helplessness, who are without a working knowledge of the elements or any organic comprehension of the fundamental principles of the subject, and hence cannot be imbued with its true spirit, continue in the classical courses, because the system has originally propelled them in this direction, and arrogant, feeble, and inflexible as it is, has neither

turned them aside from a road which they cannot intelligently travel, nor enabled them to enter competently at an early period upon some congenial line of advanced work.

The principle of elective study is, in the first instance, largely a negative principle. . . . . Even with the help of the most careful and disinterested advice on the positive side, the beginner can find the right avenues to a future course of liberal studies only by a tentative process, step by step, subject by subject, and largely through negative indications. . . . . In order that students may be led to find ultimately their rightful places, that is to say, that they may be prevented from remaining in the wrong place, the way must be clear for strict elimination and thorough purgation of classes from the earliest period. But the vanity and moral obliquity of the various-degree system, with the unreal forms of teaching and learning which accompany it, all reinforced and sheltered by the popular pressure for a preferred academic distinction, tend to defeat this beneficent purpose at every point. A free and elastic university curriculum means a lifting of the pressure from without; and, from within, discouragement of rivalry in the race for numbers, a surer fixing of responsibilities, and the opening of an opportunity to set in effective operation those negative forces which afford the sole means of redemption and improvement. *One* academic degree, with the equality and liberty that follow in its train, implies the unshackling of Greek and Latin, and a possibility of vindicating classical studies to a position of public usefulness as well as grace. . . . . .

REPORT ON THE EXPEDITION TO THE JOHN DAY FOSSIL FIELDS.*

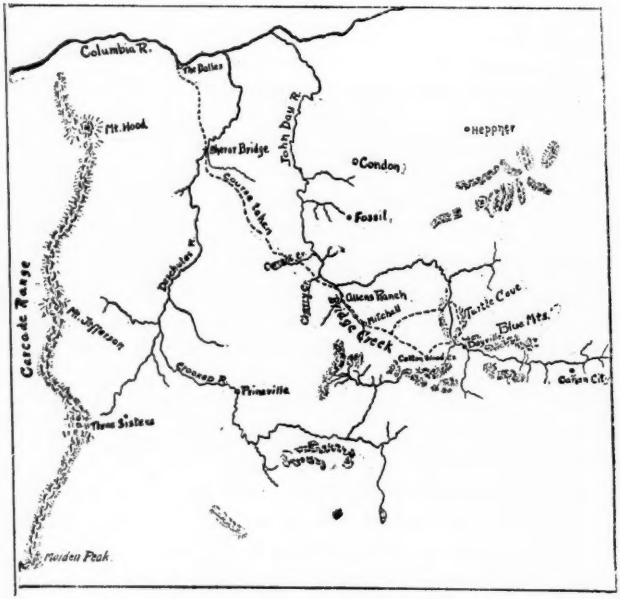
By JOHN C. MERRIAM.

The fossil field of the John Day region, in eastern Oregon, has been known to geologists for many years as one of most important of the numerous West-American localities furnishing good remains of Tertiary mammals. During the past thirty years the leading palaeontologists of the country have obtained from it large collections of remains, containing a great number of new and interesting animals. Professor Marsh of Yale, Professor Cope of Pennsylvania, Professor Condon of Oregon, Professor Scott of Princeton, and others, have personally conducted expeditions into the field. Beside these expeditions, professional collectors have worked over the ground during more than a dozen seasons. Excepting the collection of Professor Condon, at the State University of Oregon, the whole of the great amount of material accumulated has passed into the possession of a few of the large Eastern museums.

The John Day fossil beds are exposed in patches over a considerable area in Oregon, to the east of the Cascade range. The principal exposures being along the John Day River and its tributaries, the name of the river has been applied to them, and they are now known technically as the John Day system. Their age, as determined by

*Read before the Science Association, August 29, 1899.

comparison of the fossils with those of other systems, is generally supposed to be Miocene.



OUTLINE MAP OF JOHN DAY REGION.

Our party, including Mr. F. C. Calkins, Mr. L. H. Miller, Mr. G. B. Hatch, and the writer, assembled at The Dalles, about May 20th, and, accompanied by Mr. L. S. Davis as guide, started in a southeasterly direction, aiming to enter the fossil fields near Bridge Creek. For about seventy-five miles our road lay almost entirely upon a vast lava field, which supports very little life, either animal or

vegetable. In places this poverty is due to actual lack of soil, the surface of the ground being almost covered with weathered lava fragments. A large part of the region was, however, once good pasture land, supporting an abundance of nutritious bunch grass. The advent of the sheep has very greatly changed the whole face of the country. The pastures have been so thoroughly "sheeped" over that most unfenced areas are almost entirely denuded of the grass, which, being kept down too closely, has finally died out and does not return. With the grass have gone many of the smaller mammals, which were more or less dependent on it, and the snakes, which fed on the mammals. The old inhabitants think the rainfall has been considerably lessened by the destruction of the bunch grass. Certainly the manner in which the rain is disposed of when it does come is altered. Instead of being partially retained by the soil, as in years past, nearly the whole of the water from heavy showers goes off with a rush, changing the smaller streams into raging torrents, and not infrequently causing considerable damage to property or even loss of life.

The region through which we passed, though underlaid by lava flows often of great lateral extent, is not an unbroken expanse of flat country, but has been broken up into several quite distinct areas by crustal movements which have taken place since the outpouring of the lava. As our party approached the Deschutes River from the west, we ascended a long, gentle slope. Within a mile or two of the river we came suddenly upon a reverse slope, which it is possible to descend on horseback at only a few points. This steep escarpment could be seen for a long distance to the north and south of us, the Deschutes keeping close to its foot to the north. From the bottom of this slope another extensive plain, seeming at a distance almost perfectly flat, stretched away to the north and east with a gentle upward slope to the southeast. At Currant Creek, forty-five miles to the southeast, after passing over this long slope, we came suddenly upon a second jumping-off place

much like the first. Evidently the long, gentle, western slopes and steep escarpments toward the eastern side, indicate, in rock of this character, the breaking up of an originally level region into blocks, which have tilted slightly to the west, giving the long, gentle slopes on that side, and the steep ones to the east, where they have been slightly elevated.

The Deschutes River, in fact all the rivers of this region, including the Columbia, have cut down sharply through the lava beds, forming magnificent gorges with almost vertical walls many hundred, in some cases several thousand, feet in height. Throughout the greater part of the lava country the streams are swift and full of rapids, and are rapidly deepening their cañons. Not having reached the stage at which they begin to widen their valleys, they do not materially affect the topography. The cañons on the plains are so narrow that they are almost hidden until one is fairly upon them.

From the top of the ridge at Currant Creek we obtained our first view of the fossil-bearing beds, also our best lesson in geology. The region immediately to the east is made up principally of older rocks, probably Mesozoic and Eocene, which are quite sharply tilted, and are cut by erosion into a multitude of irregular peaks and ridges. Twenty-five miles to the east we could just distinguish the nearly horizontal John Day beds, resting upon the older formations and covered in turn by a thick capping of lava. The older formations of this portion of the country have so far furnished no fossils, excepting some sub-tropical leaves, for which a new locality was discovered by our party.

The first working camp was located at Allen's ranch, on Bridge Creek, in the partial shelter of a thick growth of sage brush. From that point numerous excursions were made into the surrounding country.

The exposure of the John Day beds at Bridge Creek is one of the best for studying the general geology of the

deposits. The beds are here about fifteen hundred feet thick and are composed largely of volcanic materials mixed with sand and clay. They are nearly all strikingly colored, and probably vary somewhat in composition in the differently colored strata. At all the John Day exposures visited by our party the lowest beds were a deep red, the highest ones buff or white, and the intermediate strata blue or green. One of the results of our geological work was the determination of the persistence of these three sets of beds over the whole region. By means of these horizons we were enabled to study the vertical range or distribution in time of the animal species they contain.

From the character of the fossil remains found in the John Day beds, they are generally supposed to be deposits laid down in an inland sea or lake, once filling a somewhat irregular basin extending over a large part of eastern Oregon and portions of the adjoining states. The fossil remains consist of a few fresh water shells, a number of land shells washed into the lake by rains or streams, and the skeletons of a large number of vertebrates which were either drowned in the lake and buried entire in the mud, or, as was more frequently the case, which died upon the land, only portions of their dismembered skeletons being washed into the lake with the river or rain wash. Our study of the vertical distribution of the species in the beds brings out some interesting facts relating to the life about the lake during different periods of its existence. An example of this is found in the distribution of the rodents, which are found sparingly in the middle division and in the main portion of the upper beds, but are abundant at several localities, widely separated, in a stratum near the top of the upper beds. Evidently for some reason conditions were more than ordinarily favorable for the existence of small rodents about the lake at the time this stratum was being deposited, and they multiplied rapidly. The increase in the number of individuals was apparently accompanied by increase in the number of species.

How close to the time of the drying up of the lake the lava floods were poured over the deposits laid down upon its floor we do not know, but possibly a considerable interval separated these two events. The John Day beds show in some places evidence of erosion before being capped over. After the cooling of the lava there occured the tilting of the crust blocks already mentioned.

One of the most interesting points in the geology of this region is found in the cutting of the streams. This gives us a measure of a portion at least of the time since the lava cap was completed. The rivers have evidently cut their present gorges through the lava, the fossil beds, and in some place into the older formations below since the lava floods cooled. Not the least interesting feature in the study of the fossils of this region in the field is the conclusive evidence, constantly before the collector's eyes, of the enormous length of time that has passed since the remains were entombed, as is shown by the thousands of feet of lake deposit and lava piled upon them, and by the great depth of the cañons cut since these great accumulations of strata were completed.

The Bridge Creek locality has probably been more thoroughly explored than any other in the country and has for that reason furnished a large number of fine specimens. The careful inspection of this and all the other good exposures by earlier expeditions made the work of our party very difficult, and we were dependent for our best finds upon specimens which had been only partially uncovered by weathering and had therefore more readily escaped notice. The best find of the party was made by Mr. Calkins on the evening of our first day here. A single tooth and a small fragment of bone protruding from the face of a steep cliff, when followed back into the rock, proved to be one side of the snout of a huge, extinct hog. The taking of this specimen into camp was the most difficult task of the expedition and occupied a portion of our party interruptedly for the first week and nearly all of us

regularly for the second week. As we were pressed for time, we went forth day after day vowing to return at night with the skull. Thanks to the scientific instincts of the party, haste was made slowly and we were finally rewarded by seeing the skull reach camp practically uninjured. Many other good specimens, including a fairly complete skeleton of an *Oreodon*, one of the primitive even-toed ungulates, were discovered at Bridge Creek, but so much time was consumed in work on the large skull that other collecting suffered.

From Bridge Creek the party moved by slow stages to what is conceded to be the best and most extensive collecting ground in the region. This locality is situated in a widening of the gorge of the John Day beginning about three miles below the mouth of Cottonwood Creek, and has been called Turtle Cove by Professor Condon, who is its discoverer. On the road we visited a new locality for cretaceous fossils, discovered by our guide, Mr. Davis, and spent parts of two days collecting in what are known as the Loup Fork beds, on and near the John Day at Cottonwood. The Loup Fork beds, some hundreds of feet in thickness, rest upon the lavas over the John Day system and contain remains of a higher and more specialized fauna than that of the beds below the lava. The Loup Fork strata are mostly exposed in nearly vertical cliffs which weather very little, so that we were content to pick up a few good teeth and some limb bones, representing several species of horse, mastodon, rhinoceros, etc. The horse teeth serve to fill out a gap in the evolutionary series of horses already in our possession.

The entrance into Turtle Cove was effected with some difficulty, as the river just above it passes through a very narrow gorge, impassable except by boat. We found it necessary after fording the river to cross a high range of hills on a road which was for considerable stretches literally hidden by rocks averaging a foot or more in diameter. In the Cove two camps were made from which we worked a

number of the best exposures. The largest outcrop, called by us the Blue Basin, is a veritable labyrinth of cañons, gulches, and caves cut into the soft blue rock of the middle John Day beds by the heavy rains. The coloring of these beds is frequently most wonderful and of the most delicate shades. Passing along the bottom of any of the larger cañons, the wilderness of finely sculptured and delicately-tinted peaks and pinnacles about frequently causes one involuntarily to pause and gaze, astonished that even nature could produce such magnificent architecture.

As the result of our collecting in Turtle Cove, we have several dozen skulls of larger mammals and about as many more of small rodents, besides many good specimens of teeth, limbs, vertebrae, etc. The best specimens include a nearly complete skull of a three-toed horse (*Anchitherium*), fine specimens of two extinct wolves, a rhinoceros, many *Oreodons*, a primitive deer, several turtles, etc.

Our geological studies, begun at Bridge Creek, were here continued, and without exception the previous observations on the sequence of the beds of the system were confirmed. Mr. Calkins made a complete collection of the rocks of the region for the petrographical museum and Mr. Miller, whose time was partly devoted to zoölogical work, collected a large number of birds, mammals, and reptiles.

On the return trip we crossed the mountains to the west of the Cove, and, regaining the stage road near Mitchell, passed over the same territory covered on the way out.

Though some of the scientific results of the expedition have already been briefly mentioned, it should perhaps be stated that our collections have not yet been really studied, as the business in the field is mainly to acquire. The careful preparation of the specimens, requiring many months of work, must be completed before exact study of the relationships and history of the species can begin.

THE HARRIMAN ALASKAN EXPEDITION.*

By W. E. RITTER.

The Harriman Alaskan Expedition in its fully organized form left Seattle by steamer on May 31, 1899. Its eastern, and larger, contingent had arrived in that city on the same day by special train, and had there and at Portland, Or., been joined by the California and Washington members. The steamer Geo. W. Elder, one of the largest and best of the ships owned by the Oregon Railway and Navigation Company, had been chartered for two months by the patron and organizer of the expedition, Mr. E. H. Harriman of New York, and was consequently entirely under his control. The official list of the party, including the host's family circle and his guests, contains fifty-four names. In addition to these there were a large number of hired guides, packers, and cooks, besides the ship's crew.

For the purposes of this article it will be important to speak somewhat in detail concerning the personnel of the guest portion of the party; and first of all must be mentioned the two men on whom, next to Mr. Harriman himself, rested the management of the expedition. These were Dr. Lewis R. Morris of New York, and Dr. C. Hart Merriam of Washington, D. C.

In the selection of his guests, Mr. Harriman aimed to have every aspect of nature in the regions that should be visited attended to by competent and appreciative persons.

* Read before the Science Association, September 2, 1899.

Thus the resources of Alaska to the painter's art, hitherto so largely neglected, were entrusted to such hands as those of R. Swain Gifford and Fred S. Dellenbaugh, both of New York City, while it was assumed that if there be anything in mountain and island, snow-field and desert waste, forest and bird life, capable of touching the chords of poetic fancy, these would not escape such eyes and hearts as those possessed by John Burroughs, John Muir, and Chas. Keeler.

A dark room for developing photographs was fitted up on board, and Edward S. Curtis of Seattle was the professional photographer. But numerous cameras were in constant use in the hands of experienced amateurs, and as the weather was propitious much of the time, the collection of photographs was large and rich.

All the departments of Natural History were represented by scientists of wide experience and well-known ability in their special fields. Thus geology was represented by Dr. G. K. Gilbert of the U. S. Geological Survey, Professor B. K. Emerson of Amherst College, and Dr. Charles Palache of Harvard University, while the geographical work was looked after by Dr. Henry Gannett, chief geographer of the U. S. Geological Survey. The corps of botanists consisted of F. V. Coville, Chief of the Division of Botany, U. S. Department of Agriculture, Professor Wm. Trelease, Director of the Shaw Botanic Gardens of St. Louis, Professor Wm. H. Brewer of Yale University, and Dr. T. H. Kearney of Washington, D. C., all workers with land plants; and Professor De A. Saunders of Brookings, South Dakota, a specialist in marine botany.

Dr. B. E. Fernow, Professor of Forestry at Cornell University, gave attention, from the economical standpoint, to the forests of the regions visited.

The corps of zoölogists was even more numerous and varied than that of botanists. Dr. C. Hart Merriam, Chief of the Biological Survey, U. S. Department of Agriculture, Dr. D. G. Elliot of the Field Columbian Museum

of Chicago, Dr. A. K. Fisher and Mr. E. C. Starks of Washington, D. C., were scientifically responsible for mammals. Dr. Robert Ridgeway, Curator of Ornithology at the National Museum, Mr. L. A. Fuertes, a bird collector and artist of Ithaca, N. Y., and Mr. L. J. Cole of the University of Michigan, gave their time to the birds. Dr. Wm. H. Dall, Curator in the U. S. National Museum and Paleontologist of the U. S. Geological Survey, was the expert to whom was referred the shells and fossils collected.

Professor Trevor Kincaid of the State University of Washington was the professional entomologist.

Professor Wesley R. Coe of Yale University, and myself, and in a measure Mr. Kincaid, were held responsible for the marine invertebrates.

The question of how much serious scientific work could be done on such a trip will inevitably arise, particularly in the minds of those familiar with scientific exploration and collection. Considering the fact that the Elder is an ordinary passenger and freight ship, that her crew was wholly unaccustomed to any other than ordinary service, and that the party represented such a variety of interests and wishes, the opportunities and facilities for work were far superior to what might have been anticipated. In fact, all things considered, they were remarkably good.

For the use of the workers three naptha and steam launches were provided; also boats and skiffs of all kinds, beside the usual boats of the ship. Camping outfits were aboard in sufficient numbers to enable several parties to be in camp at the same time.

The chart room was converted into a laboratory for the finer and cleaner kinds of work, while most of the space on the main deck on the starboard side of the ship, along side the engine rooms and kitchen, was given over to the coarser, dirtier work of the botanists and zoölogists; and it is doubtful if such a queer variety of refuse ever went through the scuppers of any other passenger ship as found its way through those of the Elder during this cruise. The dining-

room table shed its red spread on many a day between meals to give botanists, entomologists, and geologists a chance to spread out and sort their plunder. The engine rooms were filled almost to the exclusion of their rightful occupants much of the time, with drying collecting suits, plant presses, shell-fish, etc., etc. The hurricane deck was strewn fore and aft, on sunny days, with skeletons, bird and mammal skins, shells and rocks, sea weeds and plant driers. Miles were steamed with one or more of the ship's boats swung from her davits, ready to be cast into the water at the moment her propeller stopped. The Jacob's ladder or the accommodation ladder, one or both, and various heaving lines, were over her side much of the time, so that as soon as the launches and boats could get alongside the collectors were ready to step into them. The after capstan of the ship did royal service hauling the big dredge while the ship was at dock or anchor.

As has already been said, Mr. Harriman had absolute control of the vessel; and to his great ability in handling men and affairs, both in the large and in minutest detail, was due, in great measure, the success of the voyage. But, in addition, the strict orders of the captain to all the officers and men were that the needs and conveniences of the party should be attended to, to the fullest extent possible at all times. Such orders appeared, however, to be superfluous, for almost without exception the crew entered thoroughly into the spirit of the enterprise, and the willingness and efficiency with which almost all of them responded to the unusual demands upon them were thoroughly appreciated by the party, particularly those of the members upon whom chiefly fell the actual work of collecting and caring for the natural history material. This aspect of the voyage deserves to be dwelt upon at greater length than is possible here; but those who have some familiarity with the rather stereotyped duties of a ship's crew, will appreciate the consternation that might be produced among officers and men by having three dozen crazy naturalists turned loose among

them, and at the same time receiving orders that they must hold themselves strictly at the mercy of their tormentors.

For the first few days some of the less adaptable of the under-officers manifested concern about the "discipline of the ship," but long before the end of the voyage all qualms of this sort seemed to have passed away, and things went on very smoothly.

If there are many captains in the coastwise service on the Pacific Coast of such all-round excellence as Captain Peter Doran, the unanimous verdict of the Harriman party would be, I am sure, that the ships of this service are in the hands of a remarkable lot of masters.

Varied as were the wishes and requests of the numerous scientific members of the party, in very few instances were these made known to Mr. Harriman, that he did not find some means of gratifying them either wholly or in part.

The course taken by the expedition may be indicated by a glance at the chief localities where work was done. These were: at numerous points in southeastern Alaska, particularly at Wrangell, Juneau, Glacier Bay, and Sitka; in Yakutat Bay; at numerous places in Prince William Sound; at the entrance to Cook Inlet; on Kadiak and the neighboring islands; at numerous points among the Shumagin Islands and on the adjacent mainland; at Unalaska; at the Bogoslof, Pribilof, St. Matthew, Hall, and St. Lawrence Islands in the Bering Sea; at Plover Bay on the Siberian coast; and at Port Clarence on the Alaskan coast at the entrance to Bering Strait.

The scientific work was done partly by excursions from the ship, the ship itself while at dock or anchor being the base of operations; and partly by camping parties left by the ship for a time while she cruised with the main portion of the party in neighboring waters.

Exactly how many times the ship stopped during the journey only an examination of her log could reveal, but from my own journal and memory I know of about forty times at which she stopped for a sufficient period—from a

few hours to three or four days—to enable the collectors to carry on substantial work. Of the camps established for doing scientific work, I can recall about twenty. The camping parties were made up at different times and places of from two to six or eight men, and usually contained one or more specialists from the different departments of natural history represented in the expedition. They remained at the points where located for periods of time varying from one to twelve days.

The expedition reached Seattle on its homeward journey on July 30th, having been gone from the same port just two months. During the time, the Elder had steamed about 9,000 miles, and as she is not a fast vessel, her forced speed being less than thirteen knots, it is obvious that she must have been under way for the greater portion of the time. These considerations make it superfluous to say that anything like an exhaustive scientific investigation into the natural history of the regions visited was impossible. Nevertheless the scientific results of the expedition will be numerous and important. This was made possible by the fact that, at least as regards some of the departments of natural history to which attention was given, the places at which the collections and observations were made were virgin soil to scientific exploration. This is particularly true of the geology and geography of some of the regions and of the marine botany and zoölogy. Thus many glaciers, particularly in Prince William Sound, have never been named and charted even, to say nothing of their being unexplored; and at the head of Port Wells, one of the arms of this Sound, our ship entered a large fiord, the existence of which seems to have been hitherto unknown to white men. This, together with the half dozen or more glaciers that enter it, was carefully explored and mapped by the geologists and geographers, and the name of our host was bestowed upon it and the magnificent glacier at its head. This was probably the richest catch made by the geologists, but they have many other new or otherwise interesting

observations that will form the basis of their reports. But without doubt the largest body of entirely new knowledge that the expedition will contribute to the world's existing store will be in the domains of entomology and marine invertebrate zoölogy. In both these fields there will be not only many new species of animals brought to light, but some of them will be of great scientific interest. Some of the facts gathered by Mr. Kincaid concerning the distribution and habits of insects are especially important. The work in marine botany will also yield many new facts, though somewhat more previous collecting had been done in this field than in those of entomology and marine zoölogy.

Although the land plants and animals of the region are already tolerably well known, at least as to name, yet numerous interesting observations were made, particularly on the birds and plants with reference to habits and distribution; and the botanists are confident that a detailed study of their material will reveal a number of new species. Of course large collections were made in all these branches, and many museums and private collections will be enriched thereby.

The addition of the collections made by myself to those already possessed by the University, will give us, I think I may confidently say, the richest collection of Pacific Coast marine invertebrates in existence.

The material gathered in the different departments will be put into the hands of experts to be studied and reported upon, and ultimately the results will all be got together and published in several uniform volumes, one or more of which will be of a general character, and will contain, with other matter, the history of the expedition by John Burroughs, while the technical scientific papers will, of course, be grouped by themselves.

Having thus spoken in brief of that aspect of the expedition which it has seemed to me would be of most general interest, I have done what I set myself to do, and

might leave the matter here. I cannot, however, close without a word in reference to some of the other aspects of the voyage. Richly as it yielded to most of us in professional wares, the profits from this source will hardly be counted even by a large majority of the scientific contingent of the party, as out-valuing those which came in other ways, but particularly from the sociable (I do not mean social) and recreational sides. The Harriman Alaskan Expedition will certainly stand as a red-letter page in the life-history of nearly every one of its members.

OFFICIAL ACTION.

The following letter was communicated to the Regents at their meeting May 16, 1899:

BERKELEY, May 16, 1899.

To the Honorable the Regents of the University of California,

GENTLEMEN:—It is the wish of Mrs. C. B. Houghton, of Benicia, to found in the University of California a scholarship to be known, in memory of her late husband, as the Cornelius B. Houghton Scholarship. I enclose, on behalf of Mrs. Houghton, a check for $150.00, which sum she desires to be regarded as the income of such scholarship for the academic year 1899–1900. Mrs. Houghton has made provision for the eventual payment of a principal sum sufficient to yield an annual income of $150.00. In the meantime she engages to pay yearly to the Regents of the University the sum of $150.00 for the maintenance of said scholarship.

The qualifications for this scholarship Mrs. Houghton desires to be character, ability, and need; and she wishes it to be bestowed in the same manner and by the same authorities as the Phebe Hearst Scholarships. On account of the fact that Mr. Houghton's life was long identified with Benicia, Mrs. Houghton expresses the wish that, other things being equal, a preference may be given in the award of this scholarship to students who may reside in or be otherwise connected with Benicia or its neighborhood.

Cornelius B. Houghton, in whose memory this scholarship is founded, was born on April 14, 1823, in Cambridge, Mass., where his early education was obtained. He came to California in 1849, and at first sought his fortunes in the mines. In 1853, however, he went to Benicia, where he continued to reside, engaged in the lumber business, until his death. In 1860 he married Fanny M. Chandler. One daughter was born to them, but their home was bereft of her presence by her early death at the age of eleven. Mr. Houghton died October 25, 1895.

Mr. Houghton was a public-spirited man, interested particularly in the affairs of the community in which he passed his life. He served

his city for a number of years as a member of its Board of Trustees, and was a faithful, wise, and efficient public officer. In his business relations he ever showed scrupulous integrity and enjoyed the unbounded confidence of his fellow-citizens. In tastes he was simple; in character and demeanor he displayed a nature gentle, pure, and refined.

I give this brief memorandum of his life and character in order that it may be incorporated in the history of the University, and in order that the young men and women, who, during the years to come, shall be enabled, through the Cornelius B. Houghton Scholarship, to obtain a university education, and shall be to him an everliving memorial, may strive to worthily honor his life by a similar purity and nobility in their own lives.

Asking that you render grateful acknowledgement to the kind and noble lady who seeks to found this monument to her husband, and has given this testimony of her affection for the University and this bounty for the education of our youth, I remain

Respectfully yours,
WILLIAM CAREY JONES.

At a meeting of the Regents of the University of California, July 11, 1899, the following letter was received and the terms of donation therein indicated were accepted:

BERKELEY, July 10, 1899.

To the Honorable the Regents of the University of California,

GENTLEMEN:—On behalf of Mrs. C. B. Houghton there is herewith presented to the University of California the sum of three thousand dollars ($3,000.00), as the endowment of the Cornelius B. Houghton scholarship. The terms and conditions of this endowment were stated in a letter to your honorable body dated May 16, 1899. At the same time the sum of $150.00 was handed to you as the income of said scholarship for the year 1899–1900. It is the hope of Mrs. Houghton that the three thousand dollars herewith delivered may yield continuously an income of $150.00. She does not desire any more than that amount to be paid to the beneficiary for any one year. Any excess of interest and any lapsed income she desires may be added to the principal sum.

Mrs. Houghton, however, makes no binding conditions on this gift other than that the main purpose of the endowment shall be observed, and that the name of her late husband, Cornelius B. Houghton, shall be preserved in connection therewith. On behalf of Mrs. Houghton,

Respectfully yours,
WM. CAREY JONES.

At a meeting of the Regents of the University of California Mr. Hallidie presented the following resolution, which was adopted and referred to Regents Kirk, Rodgers, ann Waymire:

Resolved, That a cordial invitation be extended to the members of the National Educational Association, now in session at Los Angeles, to visit the buildings and grounds of the University of California before they return to their several homes; and that suitable steps be taken to secure the attendance of prominent members of the Association at a public meeting to be held in Berkeley soon after the opening of the next academic semester.

At a meeting of the Regents of the University of California, July 11, 1899, Mr. Hallidie offered the following resolution, which was adopted:

Resolved, That Professor Elmer E. Brown be authorized to represent the University of California at the annual meeting of the National Association of State Universities, to be held in Los Angeles during the week of July 10–15, 1899.

At a meeting of the Academic Council held May 15, 1899, the Committee on Scholarships presented the following reports, which were adopted:

UNIVERSITY OF CALIFORNIA,
BERKELEY, May 15, 1899.

To the Academic Council:

Your Committee on Scholarships begs leave to make the following report and recommendations:

Two hundred and nineteen applications were before the Committee for consideration. Five vacancies occur in the Phebe Hearst Scholarships through graduation. Thirteen vacancies occur in the State of California and Levi Strauss Scholarships through graduation and resignation. The number of applications and of vacancies by Congressional districts is as follows:

	Applications.	Vacancies.
1st Congressional District	23	3
2nd Congressional District	25	3
3rd Congressional District	47	2
4th and 5th Congressional Districts	43	3
6th Congressional District	38	2
7th Congressional District	43	0
Total	219	13

Several additional vacancies have been created by the Committee by reason of unsatisfactory work or by appointment to be Phebe Hearst Scholars.

In the matter of the Phebe Hearst Scholarships, we recommend that the Academic Council appoint, in accordance with the directions of Mrs. Hearst's letter of September, 1891, the following young women to be Phebe Hearst Scholars for the year 1899–1900:—Reappointed: Alice Marion Cummings, Senior, Social Sciences, Santa Cruz; Mary Grace Wiltshire, Senior, Social Sciences, San Bernardino; Anna Ruth Wilder, Senior, Social Sciences, Oakland. Newly Appointed: Gertrude Eudora Allen, Senior, Social Sciences, San Diego; May Eleanor Gates, Sophomore, Social Sciences, San Francisco; Anne Lucia Holmes, Junior, Social Sciences, Riverside; Kate Courtenay Johnston, Junior, Letters, Los Angeles; Rachel Kurlandzik, Junior, Social Sciences, San Francisco.

In the matter of the State of California Scholarships we recommend that the Academic Council appoint, in accordance with the directions of the resolution of the Regents of March, 1897, the following persons to be State of California Scholars for the year 1899–1900:—First Congressional District. Newly Appointed: William Burt Albertson, Sophomore, Mining, Buckeye, Shasta County; Sally Agnes Dexter, Sophomore, Social Sciences, Little Shasta, Siskiyou County; Louis Albert Elmore, Freshman, Letters, Santa Rosa; Rose Humann, Freshman, Social Sciences, Santa Rosa. Second Congressional District. Reappointed: Minnie Beatrice Bannon, Junior, Letters, Sacramento; Richard Walton Tully, Junior, Social Sciences, Stockton. Newly Appointed: Mary Isabel Stockton, Junior, Social Sciences, Stockton; Otto Goldman, Freshman, Mechanics, Thermalito. Third Congressional District. Reappointed: Agnes Frisius, Junior, Social Sciences, Alameda; Reno Harley Hutchinson, Senior, Letters, Oakland; Claude Irvin Rhodes, Sophomore, Mining, Woodland. Newly Appointed: Fanny H. Avery, Sophomore, Social Sciences, Berkeley. Fourth and Fifth Congressional Districts (Together). Reappointed: Alice Bowman Wright, Junior, Letters, Fourth District, San Francisco; Adrienne Cerf, Junior, Social Sciences, Fifth District, San Francisco; Vincenza Catherine Milledge, Junior, Social Sciences, Fifth District, San Francisco; Gertrude Sutcliffe, Junior, Social Sciences, Fourth District, San Francisco; Eliza Cross, Junior, Social Sciences, Fifth District, Saratoga. Newly Appointed: Alice Kimball, Senior, Natural Sciences, Fourth District, San Francisco; James Hugh Wise, Freshman, Mining, Fifth District, San Francisco; Ellen McKay Hensel, Sophomore, Letters, Fifth District, San Francisco. Sixth Congressional District. Reappointed: Frank George Goodenow,

Junior, Letters, Los Angeles; Robert Pettinger Stephenson, Junior, Mechanics, Nordhoff. Newly Appointed: Edna Tullock Owen, Junior, Social Sciences, Santa Barbara; Katherine Maloy Layne, Junior, Social Sciences, Pomona. Seventh Congressional District. Reappointed: Flora Genevieve Savage, Junior, Natural Sciences, Tulare; George Graham Hunter, Junior, Social Sciences, Bakersfield; Walter Samuel Sessions, Junior, Mechanics, Redlands; John Nolan Chain, Junior, Natural Sciences, San Diego.

In the matter of the Levi Strauss Scholarships we recommend that the Academic Council appoint, in accordance with the directions of the resolutions of the Regents of March, 1897, the following persons to be Levi Strauss Scholars for the year 1899–1900:—First Congressional District. Reappointed: Jessie Bohall, Junior, Social Sciences, Arcata; Edith Edna Gaddis, Junior, Social Sciences, Santa Rosa; Edith Mabel Kendall, Junior, Chemistry, Manchester; Inga Ernestine Ourblin, Junior, Social Sciences, San Rafael. Second Congressional District. Reappointed: Benjamin Allen Baird, Senior, Civil Engineering, Lodi; Amy Gertrude Van Deerlin, Junior, Social Sciences, Grass Valley. Newly Appointed: Lena May Macaulay, Senior, Letters, Auburn; Eugenia Tyron Mouser, Sophomore, Social Sciences, Sacramento. Third Congressional District. Reappointed: Margaret Agnes Fortier, Junior, Social Sciences, East Oakland; Noel Hunt Garrison, Senior, Letters, Colusa; Fred Field Goodsell, Sophomore, Social Sciences, Byron. Newly Appointed: James Mossin Koford, Freshman, Social Sciences, Vacaville. Fourth and Fifth Congressional Districts (Together). Reappointed: Carl Sophus Hansen, Senior, Fourth District, San Francisco; Alfred Charles Skaife, Junior, Letters, Fifth District, San Francisco; Frank Walter Kerns, Junior, Mechanics, Fifth District, San José; Annie Harriet Allen, Junior, Letters, Fifth District, San Francisco; Monroe Emanuel Deutsch, Sophomore, Letters, Fourth District, San Francisco. Newly Appointed: Theobald Percy Bayer, Junior, Social Sciences, Fifth District, San José; Violet Evelyn Beauchamp Baugh, Freshman, Social Sciences, Fifth District, San Francisco; Flora Adelina Domenica Bacigalupi, Sophomore, Letters, Fourth District, San Francisco. Sixth Congressional District. Reappointed: Walter Wadsworth Bradley, Junior, Mining, Spreckles; Willard Giles Parsons, Senior, Letters, Los Angeles; Pearl Marshall, Senior, Letters, Santa Maria. Newly Appointed: Charles Clarence Williams, Freshman, Mining, Whittier. Seventh Congressional District. Reappointed: Clyde Merrill Westcott, Senior, Chemistry, Tustin; Louis Arce, Sophomore, Civil Engineering, Oakdale; Henry Noble Bagley, Freshman, Mining, Merced. Newly Appointed; Estella M. Murdock, Sophomore, Natural Sciences, San Diego.

In the matter of the Cornelius B. Houghton Scholarship, that the following named be appointed to be the Cornelius B. Houghton Scholar for the year 1899–1900:—Florence E. Barnard, Junior, Social Sciences, San Francisco.

WM. CAREY JONES,
Chairman Committee on Scholarships.

UNIVERSITY OF CALIFORNIA,
BERKELEY, May 15, 1899.

To the Academic Council:

Your Committee on Scholarships recommends that you recommend to the Trustees of the Hinckley Fund that the income of the Hinckley Scholarship be divided, for the year 1899-1900, between R. H. Curtiss, Natural Sciences, Redlands, and Fred G. Athearn, Letters, Pomona.

For the Committee,
WM. CAREY JONES, Chairman.

SCIENTIFIC SOCIETIES.

SCIENCE ASSOCIATION.

At a meeting of the Science Association, May 10, 1899, Professor Stringham read a paper on "The New Geometrical Cosmos," of which the following is an abstract:

"Historically geometry begins with measurement; logically it begins with the perception of such external relations as are entirely disassociated from the ideas or measures of distance and magnitude. Thus projective geometry constitutes the foundation upon which the superstructure of metrical geometry is built. The former can exist in the mind without a presupposition of the latter, but not *vice versa*.

"As a starting point in the theory of measurement it was assumed that the whole of the Euclidean Geometry is approximately true within a sufficiently restricted domain. From this hypothesis the differential equations of Absolute Geometry are deduced, and their solution then leads to the three types of geometry named by Klein, Elliptic, Hyperbolic, and Parabolic; the last being only another name for

ordinary Euclidean Geometry. Lie's Group-Theory then suffices to prove that no other types of geometry are possible.

"The three kinds of space, or space-form, thus made possible were briefly characterized as follows:

"1. In hyperbolic space there are no similar figures, and the area of a triangle varies as the deficiency of the sum of its three angles below two right angles. The so-called space-constant is negative. Through every point there are two parallels to a given straight line and an infinite number of non-intersectors. Space is infinite in extent.

"2. In elliptic space there are still no similar figures, and the area of a triangle varies as the excess of the sum of its angles above two right angles. The so-called space-constant is positive. There are no parallels and no non-intersectors to a given straight line through any point. Space is finite in extent.

"3. In parabolic space there are similar figures, namely figures of different size but of the same shape; and when the area of a triangle varies, the sum of its angles remains constant and equal to two right angles. The space-constant is zero. Through any point there is one, and only one parallel to a given straight line, and there are no non-intersectors except the parallel itself. Space is infinite in extent.

"Whether Nature does her work in obedience to the principles of the Euclidean, or of one of the non-Euclidean Geometries, is no concern of geometry; to find out which, is a problem in natural science, and it is sheer nonsense to talk about the truth or falsity of either the Euclidean or the non-Euclidean Geometry. Each is a part of the truth about geometry, neither is the whole of it.

"Nature is sometimes amiable to the struggling scientist. For a long time she submitted quietly to the Ptolemaic system of Astronomy. But after a time she became restive under its interpretations, and finally shattered its reckonings so completely that the Copernican system had to be invented to take its place. At present she accepts, without the slightest protest, the Euclidean system of Geometry,

and she may continue to do so for all time to come. But that she certainly will, neither mathematics nor philosophy can tell us."

CURRENT NOTES.

COMMENCEMENT WEEK.

The exercises of Commencement Week, 1899, began with a ball in the Harmon Gymnasium, on the evening of May 11.

On Friday evening, John Dewey, Ph.D., Head Professor of Philosophy in the University of Chicago, read a paper before the Philosophical Union on "The Place of Knowledge in Experience."

Saturday, May 13, was Class Day. The exercises began with the farewell pilgrimage of the graduating class. The speakers at the different buildings were: South Hall, Earl Swan; Chemistry, Ralph C. Daniels; Mining, Lloyd N. Scott; Philosophy, Wm. T. Mooney; Mechanics, Bert L. Quayle; North Hall, Chas. E. Thomas; Library, Harold S. Symmes; flagstaff, Ira J. Abraham.

In the afternoon the open-air pageant and class dispensation took place, an Oriental extravaganza being presented by the graduating class.

On Sunday afternoon the Baccalaureate address was given at the First Congregational Church by President Kellogg, on "The Sympathetic Life."

Monday morning the Graduate Council, the Academic Council, and the Faculties of Letters and the Sciences held meetings, and recommended to the Regents the successful candidates for degrees. In the evening the Alumni Association of the College of Dentistry had a banquet at the Palace Hotel, San Francisco, and the Class of '79 had a reunion at the residence of Hon. C. W. Slack. In Berkeley, Professor Dewey addressed the Philosophical Union, in the

Harmon Gymnasium, on "Psychology and Philosophical Method."*

Tuesday morning the Regents of the University met in South Hall to pass on the recommendations of the Faculties concerning degrees. At three o'clock in the afternoon, in Stiles Hall, the Alpha Chapter of the Phi Beta Kappa Society of the State of California held its first public meeting. The oration was by Professor George Holmes Howison, Mills Professor of Philosophy, and the poem by Professor Charles Mills Gayley, Professor of the English Language and Literature.

In the evening the annual banquet of the Alumni Association was held at the Merchants' Club, San Francisco, the guests of honor being President Kellogg, Professor Joseph LeConte, and Regent George C. Pardee, '79. Dr. A. A. D'Ancona, '80, presided, and Louis de F. Bartlett, '93, acted as toast-master. The following were the speakers: President Kellogg, "The Elements of Success of the University"; Regent Pardee, '79, "Regent Alumni"; Hon. John R. Glascock, '65, "Sphere of Influence of the Alumni"; Professor LeConte, "Political Reforms"; Professor W. E. Ritter, '88, "The Future Work of the Alumni Association"; T. S. Elston, '99, "The Class of '99"; J. S. Dunlap, '99; John S. Partridge, '92; and E. M. Wolf, '94.

In Berkeley the annual business meeting of the Philosophical Union was held in the Philosophy Building.

Wednesday, May 17, was Commencement Day. As in 1898, the exercises were held in a large tent that had been erected on the lower campus. After prayer by the Rev. Geo. B. Hatch of the First Congregational Church of Berkeley, the President read a statement as to the progress of the University during the year.† The four speakers were members of the graduating classes. Their subjects were as follows: "Exituri Salutamus," George Elliott Ebright, of the Medical Department; "Self-sacrifice and

* See page 159. † See page 153.

Self-assertion," Roy Victor Nye; "The Duties of the Legal Profession in the Present Crisis," Adolph Leopold Weil, Ph.B., of the Hastings College of the Law; and "The Debt the Graduate of the University of California Owes to the State," Lily Hohfeld.

The following degrees were then conferred:

The degree of Bachelor of Arts upon:—Ira Abraham, Frederic Julian Armstrong, *Emilie Avy, *Milton Eugene Blanchard, B. L., George Alvin Bond, Elsie Bowman, Thirmuthis Amy Brookman, Edith Forbes Browning, David Raymond Curtiss, *Grace Esther Dibble, William Ede, Jr., Ada Graber, Amy Hamlin, *Florence May Hanna, Elma M. Harris, Clarence Dillaway Herriott, Lily Hohfeld, Rose Hohfeld, William Hart Houston, Agnes Roxbury Jewett, Texaina Tyler Kurtz, Gertrude Dorothy La Motte, *Mary Eugenia Loy, James Milton Mannon, Mary Nina Martin, A. B., George Wilbert McDill, Harry Allen Overstreet, *George Herman Powers, Jr., Elizabeth Rothermel, William Holmes Spaulding, *Clara Marion Stark, Horatio Ward Stebbins, Harold Shakspear Symmes, Katherine Ray Wickson.

The degree of Bachelor of Letters upon:—Josephine Abraham, *Ethel May Arthur, Gertrude Therese Berg, Wilberforce Bliss, B. S., *Edna Blum, Henry John Boke, Edith Bonnell, Hugh Barr Bradford, Laura May Buffington, Harry Claussen, Mary Josephine Colby, Jessie Naylor Cole, Arthur MacDonald Ellis, Perry Evans, Florence Nightingale Ewing, Clotilde Adelaide Grunsky, Elsie Maud Guthrie, William Arthur Hackley, Jean Melnotte Hahn, Teresa Hess, Elbert Hiserman, Charles James Houston, Lillian May Julien, Manie Maccubbin Kent, William Fay Kingsbury, *Camille Levy, Maud Madden, Eva Evelyn Margeson, *Cornelia McKinne, Mittie Ursula Myers, Roy Victor Nye, Ada Howe Parker, Alice Stuart Rising, Charles Seyler, Jr., Earle Almeron Stone, Fanny Cushing Stone, Florence Wilcox Stone, Katherine Editha Sullivan, Mabel Sweet, Charles Edward Thomas, *Guy Van Schaick, Alice McDowell Venable, Margaret Webb, Katharine Wolfenden.

The degree of Bachelor of Philosophy upon:—Arthur Gates Aikin, Philip Brent Arnold, *Mary Elizabeth Bell, Thomas Porter Bishop, Belle Bowden, Albert Jacob Brown, Nellie Blanche Bryant, *Ella Castlehun, Edward Thomas Clark, William Clark, Herbert Eugene Clayburgh, Helena Cohen, Jacob Edward Cohn, Edna Ruth Congdon, Oliver Dibble, *Birney Hogin Donnell, William Sherman Downing, Knight Dunlap, Clare Louise Fassett, Alfred Lewis Giacomini, *Roscoe

*Conferred December 27, 1898.

Adams Goodcell, May Voorhees Haworth, Walter Theodore Helms, *Edith Valerie Henrici, Olga Heyman, Louise Julia Holling, Fred Harmon Huffman, *Florence May Jones, Bertha Louise Knight, Elsie Krafft, John Alexander Mackenzie, Harvey Le Fevre Marvin, *Viva Barbara McArthur, Wayne McCloud, Ethelynd Harriet McClymonds, Thomas William McPherson, William Thomas Mooney, Lavonia Ray Nash, Milton Newmark, Francis Charlier Pache, Marie Victoria Plaw, Alice Turner Porter, Walter Emile Premo, Ethel Evelyn Rennie, *Leon Lazare Roos, Nettie E. Roth, Blanche Madeleine Rouleau, Eurubian Holland Rubottom, *Rex William Sherer, Lola Jean Simpson, *Clara Hettie Smith, Josephine Marie Sorbier, Lorena Alice Sturges, Eugene Edgar Trefethen, Carl Melvin Warner, Elsie Wartenweiler, *Otto Theodore Wedemeyer, *Ralston Whitcomb, Bessie Mae Wood, Helen Emilie Youmans.

The degree of Bachelor of Science upon:—*Irving Cowan Allen, Donald Graham Aplin, B.S., Neville Richmond Baugh, George William Beattie, John Sedgwick Burd, Frank Catheart Calkins, Clarence Doane Clark, Charles Weston Clark, John Henry Collier, Jr., Harry Noftel Cooper, John Walker Craig, Harry Jeremiah Cross, Katharine Matthews Crusoe, Ralph Chandler Daniels, Ernest Henry Denicke, Melville Dozier, Jr., William Durbrow, Louis Francis Eaton, Nelson Andrew Eckart, Andrew Eliason, Jr., Thomas Sidney Elston, Fred Howard Flood, Carroll Fowler, William de Fremery, *Roy Fryer, Henry Albert Geisendorfer, Henry Walter Gibbons, Fred Johnson Greisberg, Sarah De Forest Hanscom, Sigmond Hess, Jeannette Frances Hobson, Karl Frederick Hoffmann, Burt Everett Hooper, Maude Hyman, George Washington Julien, Lawrence Kaarsberg, Augusta Glynn Kelly, Clarissa Mary Keyes, B.S., Arthur Scott King, Roscoe Lee Logan, Clarence Edward Martenstein, Maurice Alfred Newman, William Caius Pidge, Bert Leroy Quayle, Stuart Lamar Rawlings, Leland Sylvan Rosener, Mary Ross, B.S., Matthew Alexander Sammett, Lloyd Nudd Scott, Wesley Bartlett Scott, Francis Marion Simpson, Thomas Allen Smith, Roger Sprague, Arnold Valentine Stubenrauch, *John Henry Stutt, Earle Cook Swan, Seth Roswell Talcott, Bartlett Lee Thane, Alfonso Elliot de Urunuela, Floyd Roe Watson, *Alpheus Fuller Williams, Edward Livingstone Young, George J. Young, *Rose Zellerbach.

The degree of Master of Arts upon:—Charles Marcellus Bufford, A.B. (Thesis: Some Ethical Conceptions in the light of the Theory of Knowledge), Ruth Henry, A.B., Illinois Wesleyan University, A.B. (Thesis: The Literary Ideals of Jean Jacques Rousseau), Charles Harold Howard, AB. (Thesis: Physiological Phonetics: A comparative study of the vowel system of the Italian, Spanish, Portuguese,

* Conferred December 27, 1898.

French, and English languages, with especial reference to the French), James Winfield Howson, A.B. (Thesis: Determination of available ingredients in virgin soils of California), Mary Emily Hull, A.B. (Thesis: The Pearl: An attempt to show in how far this poem is an expression of the spirit and art of the Middle Ages), Theodore de Leo de Laguna, A.B. (Thesis: Hegel's Criticism of the Kantian Antinomies), Vida Sherman, B.L., M.L. (Thesis: As for degree of M.L.).

The degree of Master of Letters upon:—Eleanor Vanderbelt Bennet, B.L. (Thesis: Dialogue in Old English Poetry), Lou Hellmuth, Ph.B. (Thesis: Influence of Goethe on Carlyle), Emma Venetia Schneider, B.L. (Thesis: Comparisons and Illustrations in Lucretius), *Vida Sherman, B.L. (Thesis: The Religious Aspect of three Roman Poets: Lucretius, Virgil, Ovid), Maud Marion Taylor, B.S., Wellesley College (Thesis: Relation between English Ballad Literature and Pre-Elizabethan Drama), Ednah Harmon Wickson, B.L. (Thesis: The Romantic Element in Pre-Shaksperian Comedy).

The degree of Master of Science upon:—Edith Sumner Byxbee, B.S. (Thesis: Spindle Formation in Sphæralcea incana), Henri Theodore Antoine Hus, B.S. (Thesis: An Account of the Species of Porphyra of the West Coast of North America), *Anstruther Abercrombie Lawson, B.S. (Thesis: Some Observations on the development of the Karyokinetic Spindle in the Pollen-mother-cells of Cobæa scandens Cav.), John Walter Millar, B.S. (Thesis: Comparison of some of the rapid Methods of Ore Analysis), Thomas Milton Putnam, B.S. (Thesis: Special Point Groups on Plane Curves), Alice Robertson, B.S. (Thesis: Observations on the endoproctous Bryozoa of the Pacific Coast of North America), James Uriel Smith, B.S. (Thesis: Numerical Multiplication and Division as based on the Euclidean Theory of Proportion).

The degree of Doctor of Philosophy upon:—George Davis Louderback, A.B. (Thesis: On the origin of the Glaucophane and Associated Schists of the Coast Ranges. A contribution to the theory of the Crystalline Schists), Winthrop John Van Leuven Osterhout, A.B. and M.A., Brown University, (Thesis: Observations on Spindle-formation and Chromosome-reduction in Plants), *Milicent Washburn Shinn, A.B. (Thesis: A Study of the development of Sense Activity in the first three years of childhood, with pedagogical conclusions).

The degree of Bachelor of Laws upon:—William George Antunovich, Giovanni Bacigalupi, Alexander Richards Baldwin, Ph.B., Oscar Thomas Barber, William Mossgrove Beard, A.B., Henry Oscar Beatty, Joseph William Beretta, A.B., Olin Lamar Berry, Fred Wallace Borden, Matthew Brady, Henry Pfister Brown, Milton Choynski, B.L., James Archibald Craig, Ralph Herbert Cross, A.B., Arthur Milton Currie, Louis Glass Faulkner, Sanford Feigenbaum, Robert Nicholson Frick,

*Conferred December 27, 1898.

Isidore Golden, James Sather Hutchinson, A.B., Howard Scott Jacobs, William Albert Kelly, A.B., Christine Blanche Labarraque, Ph.B., Milton Albert Lippitt, Ph.B., Emerson Joseph Marks, Alexander McCulloch, Ph.B., Wilmer Mumma, John Cotter Quinlan, Walter Edward Rode, Abe Lincoln Rosenberg, Milton Leon Schmitt, Woodley Bates Smith, Edward Babson Stanwood, Harry Clinton Symonds, Ph.B., Charles Lawrence Thompson, A.B., Walton Cope Webb, Adolph Leopold Weil, Ph.B., Bertin Alfred Weyl, Roswell Samuel Wheeler, Ph.B., John Tully Williams, George Arthur Wright.

The degree of Doctor of Medicine upon:—Samuel Richard Arthur, Rachel Leona Ash, B.S., Thomas James Clark, John Adams Colliver, A.B., Edgar Meyer Dinkelspiel, Ph.B., George Elliott Ebright, Mark Lewis Emerson, Milton Washington Franklin, Donald Jackson Frick, Samuel James Gardner, Allen Francis Gillihan, Harrington Bidwell Graham, B.S., Walter Joseph Henesey, Paul Ruhnke Lanz, Robert Thomas Legge, Ph.G., Charles Forester Millar, Bernard Francis McElroy, A.B., Silvio Joseph Onesti, Ph.G., Saxton Temple Pope, Vida Redington, B.S., Edward James Rice, William Emerson Stevens, George Lawrence Stevenson, A.B., James Edward Taylor, B.S., Oscar Nettleton Taylor, A.B., Gustavus Adolphus Weyer, D.D.S., Emma Wightman, William Patten Willard.

The degree of Doctor of Dental Surgery upon:—William Robertson Allin, Ricardo Arroyo, William Robert Bacon, Arthur Woodley Baker, Joseph Barnett, Robert Johnson Blake, May Blossom, Walter Joseph Burridge, Monroe N. Callender, John Albert Colegrove, Anna Bella Paterson Croall, Palmer Howard Dunbar, Norman Stanley Fairweather, Cecil Albert Fugler, Lee Robert Gambitz, George Weston Gove, Frederick Thomas Grant, Francis Joseph Gruss, Benagah Ralph Hamlin, Leonore Freida Herrmann, Thomas Rodney Jones, Charles Frederick Kuster, William Joseph Lawson, George Willis Likens, William Horace Mayhew, James Benjamin Franklin Millar, Edward Martin Mulrenin, Louis Herbert Parks, Andrew Darwin Patterson, Stephen Livingston Piper, Charles Louis Reich, Wallace Hiram Renwick, Joseph Patrick River, Maurice Schiller, Thomas Ustick Smyth, Stephen Scott Southworth, Abraham Sinclair Sullivan, Alonzo Walter Tate, Howard Alan Tennyson, Rosa Edith Turner, Arthur Henry Wanz, William Louis Warnekros, Arthur Loring White, Edward Otis Whitney, John Jarvis Williams.

The degree of Graduate in Pharmacy upon:—Milton Auerbach, Mary Elizabeth Chrystal, John Vincent Craviotto, John Guy Davisson, Francis Marion Duncan, Asa White Gray, George Halloran, Raimondo Jadarola, Malachi William McMenamin, Harry Chrisley Moore, Zadoc J. Riggs, Maurice James Ryan, Albert Paul Seymour, Urbano Giovanni

Spagnoli, Abraham Spiro, Charles Augustus Triebel, Frederick Ludwig Volberg, John Morton Waste.

The degree of Doctor of Veterinary Science upon:—Thomas Edward Carroll, James Michael Murry.

The following were then commissioned: To be Colonel, Henry Walter Gibbons; to be Lieutenant-Colonel, William Ede, Jr.; to be Major, Wiliam Arthur Hackley and William Hart Houston; to be Captain, William Thomas Mooney, Roscoe Lee Logan, Thomas William McPherson, Ralph Chandler Daniels, Oliver Dibble, Carl Melvin Warner, Charles Edmund Fryer, Bert Leroy Quayle, Ernest Henry Denicke, James Joseph Kline, and Roy Fryer; to be First Lieutenant, Leland Sylvan Rosener, Wayne McCloud, John Allen Reid, Jacob Edward Cohn, Charles Seyler, Jr., Herbert William Crozier, Clarence Doane Clark, and Irving Cowan Allen.

The exercises closed with the benediction by the Rev. Geo. B. Hatch.

At one o'clock the Alumni Lunch and Reunion was held in the Harmon Gymnasium. The following toasts were responded to, Professor Wm. E. Ritter, '88, President of the Associated Alumni, acting as toast-master: "The Faculty Point of View," President Kellogg; "Recent Developments in Higher Education," Professor John Dewey, of the University of Chicago; "Thirty Years in the Vineyard," Professor Frank Soulé; "The Student and the Flag," Captain E. A. Selfridge, Jr., '94; "Co-education Then and Now," Mrs. A. F. Morrison, '78; "The Medical Alumnus," Dr. James F. McCone, '92; "Higher Levels," Alice Edwards Pratt, '81; "The Latest Out," H. A. Overstreet, '99.

The exercises of the week closed on Wednesday evening with the farewell reception to the graduating class by the President of the University. At this reception Professor LeConte read the following address on behalf of the Academic Council:

PRESIDENT KELLOGG:—We have been appointed by the Academic Council to express to you the feelings which fill the hearts of all, as the time approaches when our relations to you as our President must be severed.

You, sir, are one of the very few of us still remaining who have

been associated with the University and assisted in its councils from its very beginning. In addition to this, for nine years as its President you have determined its policy and guided its course. You became its President at a critical period in its history—just at the time when it had begun to feel the quickening of a new and higher life—a true university life—which must be carefully fostered and wisely guided; at a time, too, when we must meet the competition of another university, richly endowed and strongly manned, in our immediate vicinity. It was necessary, then, that the University should become more active in its relations to the State. It was necessary that it should be brought closer to the schools, and through the schools to the hearts of the people. It must unify and at the same time elevate the whole educational system of the State, and thus prepare for nobler citizenship. It was necessary also that it be brought in closer touch with all the important industries of the State, and through these with the vital interests of the people. It must prepare men and women for successful activity in all the higher and more intellectual pursuits of life. It must do more: it must strive to elevate all pursuits to the lofty plane of liberal culture and honorable conduct. In a word, it must become the flower and fruit of the State life, and it must react to dignify and ennoble that life.

This is the ideal of a State university, and a State university we are persuaded is the only rational form of a university for a free people. This is the ideal that you set yourself steadily to realize.

It is a grand ideal—an ideal not possible to be completely realized in a decade, or even in a century. But such approach to it as is possible to man, surely you have made. Your success is even beyond the confident expectations of your most ardent friends, and is now patent to all. It is seen in the extraordinary growth of the University—in numbers, in resources, and in equipment for effective teaching. It is seen still more significantly in the rapid development, both in teachers and students alike, of a true university spirit—the spirit of real scholarship and original research. It has become now an institution in which the professor is no longer a teacher only, but also a maker of science and philosophy—and the relation is no longer one of teacher and learner only, but also of co-workers in the field of thought. It is seen finally in the generous response of the State and of large-hearted citizens to her ever-growing needs.

It is impossible not to attribute this phenomenal growth in all directions to a rare combination and even balance of many qualities, intellectual and moral, conducive to wise administration. Among these qualities, especially affecting our relations to you and endearing you to us, but also necessary to the coöperative activity of the University as a whole, we cannot fail to recognize a clearness of insight

and a trueness of judgment untainted by vanity or self-seeking—a modesty which is not ashamed to seek counsel and knows well how to use it, whether in confirming or in modifying personal judgment. It is due to this chiefly that the Faculties, the Academic Council, the students, the whole University has become unified into a living, growing, healthy organism, all parts acting together harmoniously for the good of the whole. It is due to this that the University has, in large measure, realized the ideal of a republic—the Republic of Letters—with our wisest as its President.

We have been associated with you and tried to coöperate with you in your noble work, all of us for many years, some of us from the very founding of the University. Thus from year to year—it could not be otherwise—admiration and esteem has grown into friendship and friendship has deepened into love, until now in sorrow of impending separation our emotions threaten to break through the bounds of sober convention. But now that you feel constrained to sever the relation in which we love best to think of you, permit us to express the earnest hope that you will still and for many years remain with us as colleague, friend, and brother; that you will still continue to add the weight of your wise judgment to our deliberations; and that you and your good wife will long continue to be the centre of the social gatherings that have added so much to the enjoyment of our University life.

JOSEPH LECONTE,
THOS. R. BACON,
BERNARD MOSES,
CHARLES M. GAYLEY,
A. C. LAWSON:
Committee.

Mr. Floyd Roe Watson, of the Class of 1899, has been awarded the LeConte Memorial Fellowship for the year 1899-1900. His major work will be in Physics and the Higher Mathematics.

In accordance with a provision of the Constitution of the Board of Administration of the Fund, its management has been transferred from the Alumni Association to the Board of Regents of the University.